Terrestrial Wildlife Resources

Biological Assessment, Biological Evaluation, & Specialist report

Hungry Ridge

Salmon River Ranger District, Nez Perce – Clearwater National Forests

Idaho County, Idaho

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(Updated January 2021)

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1. Changes Between the DEIS and FEIS

- Updated elk habitat effectiveness calculations to be more quantitative using VMap.
- Updated road density for project area using project geodatabase roads layer.
- Updated current elk population estimate numbers using the most recent IDFG report; added hunter days/sq. miles used in elk vulnerability estimate to report.
- Updated moose effects analysis to focus on new research that highlights the lack of summer forage as a limiting factor in northern Idaho.
- Updated mitigation measure to describe moose winter habitat with more detail.
- Corrected MA20 acreage to include acres of MA20 outside project area per OGAA.
- Recalculated OGAA acreage to only include forested acres.
- Separated acres that meet both NIOG and FPOG from FPOG to provide more accurate descriptions.
- Removed private land from OGAA acreage.
- Identified additional Replacement OG using VMap, aerial photos, harvest history, and fire history.
- Corrected mapping error to remove treatment of Black George MA20 in unit 62.
- Corrected the description of the impacts to the MA20 patch near FS Road 9413.
- Added map that displays treatment type, road construction, and old growth habitats.
- Added map that displays locations of old growth.
- Added tables that display the breakdown of how much old growth is remaining per OGAA per alternative.
- Expanded cumulative effects area for fisher and marten analysis.
- Added references for habitat modeling.
- The North American wolverine is no longer considered a proposed species under the ESA. It is still analyzed in this report as a species on the Regional Forester's Sensitive Species List.

2. Introduction

The Hungry Ridge project has the potential to affect wildlife species and their habitats. The elements addressed in this section include terrestrial wildlife habitat conditions and the wildlife species found in project area and potentially affected by the project. Species presence/absence determinations were based on habitat presence, wildlife surveys, recorded wildlife sightings, observations made during field reconnaissance, and literature.

The effects to wildlife species and habitat is primarily measured by the amount of habitat affected and the degree of effects to threatened, endangered, sensitive, and management indicator species.

The Hungry Ridge project area provides a wide diversity of yearlong or seasonal habitats for different wildlife species. Concerns were raised about the effects of the proposed action on threatened, endangered, or sensitive species; forest plan management indicator species; old growth; and snag habitat. Concerns primarily focus on the adverse consequences of vegetation treatments and temporary road construction.

The wildlife specialist report addresses only those issues and resources specifically identified during scoping (by federal, state, or local agencies; tribes; interested or affected parties; or the Forest Service interdisciplinary team) or where an analysis is required by law, regulation, or agency direction.

Table 1-1 displays species listed as Threatened, Endangered, or Proposed for listing under the Endangered Species Act, Regional Forester's Sensitive Species that have the potential to occur on the

Nez Perce National Forest, as well as Nez Perce National Forest Management Indicator Species (MIS). Wildlife species and/or their habitat were evaluated for potential to be affected by the proposed project. Some species were eliminated from further consideration based on range, lack of habitat, and/or lack of known occurrence in the analysis area.

Table 1-1. Threatened, Endangered, Proposed, Sensitive and Management Indicator Species considered for wildlife effects analysis

Species Name	Status[1]	Primary Habitat	Analyze?	Rationale for not analyzing
Canada Lynx *Lynx canadensis*	T	Nez Perce National Forest is considered unoccupied, secondary habitat (Northern Rockies Lynx Amendment 2007). There is no designated Critical Habitat on the Nez Perce-Clearwater National Forests.	Yes	
Northern Idaho Ground Squirrel *rocitellus brunneus brunneus*	T	Grasslands. No USFWS mapped habitat on Forest.	No	Not known or suspected to be present in the project area due to lack of suitable habitat. There is no potential for effects from this project.
Grizzly Bear *Ursus arctos*	T MIS	Grizzly bear are not listed as a threatened species for the Nez Perce-Clearwater NF. Habitat is considered unoccupied.	No	Not known or suspected to be present in the project area due to lack of suitable habitat. There is no potential for effects from this project.
North American Wolverine *Gulo gulo luscus*	S	Remote areas where human disturbance is minimal, often in timber near rockslides, avalanche areas, cliffs, swamps, and meadows.	No	Not known or suspected to be present in project area due to lack of habitat. Dispersal habitat is not suitable for the establishment of home ranges, foraging, or reproduction. There is no potential for effects from this project.
Western Toad *Anaxyrus boreas*	S	A variety of aquatic and moist terrestrial habitats, prefers ponds, pools, and slow-moving streams.	Yes	
Gray Wolf *Canis lupus*	S MIS	Semi-secluded mesic meadows for denning and rendezvous sites. Ungulate summer and winter range.	Yes	
Black Swift *Cypseloides niger*	S	Neotropical migratory bird. Nests are built on cliff ledges, near or behind waterfalls or in shallow caves.	No	Not known or suspected to be present in project area due to lack of habitat. Suitable habitat not altered. There is no potential for effects from this project.
Ring-necked Snake *Diadophis punctatus*	S	Dry coniferous forests with brushy understories, open grasslands, rocky hillsides and early-seral riparian areas.	Yes	
Peregrine Falcon *Falco peregrinus anatum*	S	Nests on ledges on steep cliff faces.	No	Not known or suspected to be present in the project area due to lack of suitable habitat. There are no eyries within the project area. There is no potential for effects from this project.
Common Loon *Gavia immer*	S	Lakes with shallow and deep waters areas for breeding. Winter in coastal mine habitats.	No	Not known or suspected to be present in the project area due to lack of suitable habitat. There is no potential for effects from this project.

Species Name	Status[1]	Primary Habitat	Analyze?	Rationale for not analyzing
Bald Eagle *Haliateetus leucocephalus*	S MIS	Uses larger fish-bearing streams, rivers, and lakes for foraging, nests nearby. No known nesting sites. South Fork Clearwater River is considered winter habitat.	Yes	
Harlequin Duck *Histrionicus histrionicus*	S	Forested mountain streams with gradient less than three percent, shrub cover greater than 50%, and minimal human disturbance.	No	Not known or suspected to be present in the project area due to lack of suitable habitat. There is no potential for effects from this project.
Fisher *Pekania pennanti*	S MIS	Diverse, moist, mature forests at low to moderate elevations, with high canopy cover, often along riparian areas, and abundant large diameter woody debris.	Yes	
Townsend's Big-eared Bat *Corynorhinus townsendii*	S	Associated with grasslands, xeric shrublands, ponderosa pine, Douglas-fir, and mixed xeric forests. Roosts in buildings, mines, and caves for roosts, maternity colonies, and hibernacula. Uses forest edges, open canopied stands, and forest openings for foraging.	Yes	
Long-eared Myotis *Myotis evotis*	S	Prefers coniferous forests. Roosts are in caves, mines, buildings, bridges, crevices, rock outcrops, and under tree bark.	Yes	
Long-legged Myotis *Myotis volans*	S	Prefers coniferous forests. Roosts in tree hollows and under bark, in rock crevices, caves, mines, bridges, and buildings.	Yes	
Fringed Myotis *Myotis thysanodes*	S	Associated with grasslands, xeric shrublands, ponderosa pine, Douglas-fir, and mixed xeric forests. Maternity colonies, day roosts, and night roosts for the fringed myotis are found in caves, buildings, underground mines, rock crevices, tree hollows and bridges. Roost trees tend to be large diameter snags in early to medium stages of decay.	Yes	
Long-billed Curlew *Numenius americanus*	S	Prairies and grassy meadows near water.	No	Not known or suspected to be present in the project area due to lack of suitable habitat. There is no potential for effects from this project.
Mountain Quail *Oreortyx pictus*	S	Warm/dry shrub and riparian habitat in Salmon River basin.	Yes	

Species Name	Status[1]	Primary Habitat	Analyze?	Rationale for not analyzing
Flammulated Owl *Psiloscops flammeolus*	S	Open-canopy mature to old growth ponderosa pine and Douglas-fir forests. Forest edges with adjacent grass/forb communities for foraging. Small home ranges.	Yes	
Bighorn Sheep *Ovis canadensis*	MIS S	Open grasslands, rock outcrops-security.	No	Not known or suspected to be present in the project area due to lack of suitable habitat. There is no potential for effects from this project. There are no risks from domestic sheep grazing associated with this project.
White-headed Woodpecker *Picoides albolarvatus*	S	Open-canopy mature to old growth ponderosa pine forests. Moderate sized home ranges. Salmon River basin.	Yes	
Black-backed Woodpecker *Picoides arcticus*	S	Montane forests, primarily stands with ponderosa pine and/or lodgepole pine component. Respond opportunistically to fire and insect outbreaks.	Yes	
Coeur d' Alene Salamander *Plethodon idahoensis*	S	Riparian habitats in spray zones of waterfalls in the Selway River basin.	No	Not known or suspected to be present in the project area due to lack of suitable habitat. There is no potential for effects from this project.
Pygmy Nuthatch *Sitta pygmaea*	S	Strong and almost exclusive preference for ponderosa pine habitat, especially older, open (less than 70% canopy cover) habitats.	Yes	
Moose *Alces alces*	MIS	A mosaic of forest conditions, openings, lakes, and wetlands.	Yes	
Elk *Cervus elaphus*	MIS	Open grasslands, brush fields, and riparian areas for foraging, dense forests for cover.	Yes	
Northern Goshawk *Accipiter gentilis*	MIS	Mature to old growth, closed canopy forests for nesting. Pole stage or larger stands with open understories for foraging. May also forage along forest edges.	Yes	
Pileated Woodpecker *Dryocpus pileatus*	MIS	Nest in mature forests with high canopy closure, decadence, and multi-layered structure. Forages on stumps, trees and logs with abundant ant populations. Will use habitats with small to large trees/snags for foraging.	Yes	
American Marten *Martes americana*	MIS	Mature, higher elevation subalpine fir/Engelmann spruce forests with large woody debris and high canopy closure.	Yes	

[1]**Status**: T = Threatened, P = Proposed, S = Sensitive, MIS = Management Indicator Species

2.1 Geographic Scope

The Hungry Ridge project lies within the Mill and Johns Creek watersheds, tributaries to the South Fork Clearwater River. The project area is located about 14 miles southeast of Grangeville, Idaho. Key wildlife resource values of the Mill Creek ecosystem include big game winter and summer range and habitat for rare or sensitive wildlife species. This project also overlaps the Hungry-Mill analysis area (1996 decision).

Historically, wildland fire was the dominant influence in defining the project area landscape and the native species that adapted and persisted within this dynamic environment. The advent of effective fire suppression effectively removed wildland fire's effects from the Hungry Ridge landscape and ecological system. This has had a profound effect on the vegetation, wildlife and the ecological integrity of the area including a vegetative shift to more fire-intolerant species. Suppression of wildland fire and increasing levels of insect and disease mortality in the Hungry Ridge landscape are causing an increase in fuel loadings, including higher quantities, greater continuity and distribution. This situation has increased the risk of large, stand replacing wildfire that could adversely impact vegetation, fisheries resources, watershed function, wildlife habitat(s) and/or private land/homes.

Past management practices have also altered the vegetation and ecosystem processes and provided an extensive transportation system within the project area. Road construction has impacted wildlife security, making elk, moose, fisher, pine marten, lynx and wolves more vulnerable to hunting and trapping mortality. Additionally, the wide-spread availability and use of off-road vehicles has resulted in a reduction in wildlife security. Lack of vegetation management and other disturbance factors have led to overstocking and competition, and increasing levels of insect and disease activity thus a decline in early-seral tree species, such as ponderosa pine and western larch, increased fuel loadings and loss of economic value. Wildlife habitats associated with these forest types, are also declining. Tree size class, species distribution, and patch size throughout the landscape are inconsistent with desired conditions.

Some landscape elements, notably on drier sites, such as vegetative patch size, stand structure, and species composition are currently outside the desired range of variability for the area, including a diminishing proportion of fire-climax stands comprised of species such as ponderosa pine and western larch. Dry old forest communities are diminishing in quantity, quality, and distribution, due to fire's absence and insect and disease created mortality. While forest succession in the area has favored some wildlife species (i.e. pileated woodpecker), it has reduced habitat quality for species favoring open understories (i.e. goshawk, pygmy nuthatch and flammulated owl), decreased forage availability and quality for ungulates and decreased habitats that support black-backed woodpeckers (burned areas).

Native grassland communities have also been impacted by fire exclusion and past management practices. Annual grasses and noxious weeds have established on open, low-elevation, drier slopes, as well as along roads and trails throughout the area. Winter range herbaceous forage and browse plants have declined or become decadent, and invasive weeds and grasses have reduced the quality and quantity of available forage.

Currently, 29% of the project area (Forest Service administered lands, approximately 29,383 acres) has been previously harvested in the past 56 years. Old regeneration harvests have reduced the availability of standing snags and down wood. The size of the early-seral habitats (pole and younger) may create conditions that are not suitable for use by some wildlife species due to the decrease of canopy cover.

The largest recorded fires within the Hungry Ridge project area were during the years of 1889 and 1919. These two years recorded 23,514 acres burned, making up 78 percent of the project area. Since then, due to effective fire suppression in the 1940's, only 400 acres burn annually within the South Fork of the Clearwater basin. The lack of frequent fire in the dry forest communities have put them at risk of large, stand-replacing fires (USDA 1998).

Douglas-fir is the climax species and habitat type series at mid-elevations to lower elevations. Ponderosa pine is the major, early-seral tree species for Douglas-fir habitat types. Ponderosa pine is the dominant tree species on most Douglas-fir habitat types with Douglas-fir the dominant tree species on the remaining acreage. The understory ranges from grass on very dry sites to the taller shrubs such as alder, maple, ninebark or oceanspray on the more productive sites.

Grand fir is the climax species and habitat type series at the mid to upper elevations. Western larch and Douglas-fir are major early-seral tree species of the productive grand fir habitat types, with ponderosa pine either a minor or major early-seral species for all grand fir habitat types. The large ponderosa pine and western larch are generally much older than the grand fir or Douglas-fir and have the characteristics of mature to overmature trees. The understory can be any of the major understory species present in this area including ninebark, ocean spray, maple, alder and small grand fir. The grand fir habitat series has the ability to grow a high number of trees per acre. High tree densities have excluded much of the understory species. High tree densities can result in high crown closures and high inter-tree competition. Inter-tree competition results in low crown ratios, and smaller diameters. High tree densities and subsequent mortality can lead to high natural fuel buildups.

2.2 Methodology

The effects analysis for terrestrial wildlife species was completed using comparisons of Hungry Ridge project-related effects relative to the most limiting habitat factors for each species.

Direct and indirect effects vary by species depending upon the species home range size, mobility, and habitat requirements; habitat availability; habitat quality; and predetermined analysis units. In some cases, the effects analysis area coincides with the approximately 30,000-acre project area boundary. In other cases, the effects analysis area is defined by predetermined analysis units such as old growth analysis units, lynx analysis units, and elk habitat effectiveness units. The effects analysis areas are defined in each species' analysis section.

Direct and indirect effects are discussed for each species. Direct effects could result from road and stream alteration. Indirect effects for some species may include the expansion of weeds. Road improvements that are limited to the road prism would not have any direct or indirect effects on any species of concern.

Wildlife Habitat Mapping

Forest Service vegetation data and computer mapping tools were used to identify potentially affected habitats in the project area. Existing habitat condition was determined by extracting information from Forest Service databases; aerial photo interpretation; field reconnaissance; GIS mapping, data tables, and analyses of satellite imagery; VMap 2014 dataset; stand exams (2014), and data presented in the South Fork Clearwater River Landscape Assessment (USDA 1998).

Habitat relationships were used to model available habitat in and near the project area. The models used are based on existing vegetation, as modified from recent vegetation management projects, using the Region 1 VMap database (2014) for the Hungry Ridge project area. The advantage to using the Northern Region's Existing Vegetation Mapping Program (VMap) is that it provides a forestwide geospatial database of existing vegetation. Large areas can be evaluated for lifeform, tree dominance, tree size class and tree canopy cover class (Ahl and Brown 2015). A 2015 accuracy assessment of VMap derived Lifeform, Tree Canopy Cover, Dominance Type (DOM_40), and Tree Size for the Nez Perce-Clearwater National Forest yielded 91%, 88%, 84%, and 99% overall accuracy respectively (Brown 2015). This database has breakpoints in vegetation species dominance that drive the dominance classification, and classes of tree sizes and canopy closure that may or may not directly correspond to all known literature describing wildlife habitat associations. It is the best available data set for the project area. Where stand exam data and aerial imagery interpretation indicated otherwise, the classifications can be updated. In general, the model classification breaks are very close to breaks known in other wildlife-habitat relationship models. For example, if a tree size class breaks at 8.9 inches dbh, the VMap model break of 9.9 inches is deemed appropriate.

Wildlife observation databases were reviewed to establish the presence of wildlife species in the project area. The primary references for information on observations is Idaho Department of Fish and Game (2014) and NRIS Wildlife Observation Database.

Idaho's State Wildlife Action Plan was reviewed to determine which wildlife species that are currently on the Northern Region's sensitive species list are also on Idaho's list of Species of Greatest Conservation Need (IDFG 2017).

Information for certain MIS and sensitive bird species has been synthesized from the Northern Region Land Bird Monitoring Program with data available from the avian science center (http://avianscience.dbs.umt.edu/), as well as the North American Breeding Bird Survey (Sauer et al. 2017; http://www.mbr-pwrc.usgs.gov/bbs/bbs.html).

Population trend information for big game species was gathered from the most recent IDFG reports available (http://fishandgame.idaho.gov/).

A Conservation Assessment for the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, and Pileated Woodpecker in the Northern Region was reviewed and is based on a principle-based approach to population viability analysis (Samson 2006a). The methods and background for this principle-based approach using point observation data and vegetation inventory information based on FIA data was to build wildlife habitat relationship models to analyze short-term viability. Dispersal distance and the principles of Representation, Redundancy, and Resiliency were used to assess long-term viability issues. The principle-based approach to develop the conservation assessment was utilized due to the limitations of population viability analysis in estimating minimum viable population numbers through either models or real numbers (Samson 2006b). Please refer to Samson's 2006 Conservation Assessment for additional information and background on the methods and approached used to address viability at the forest and regional scales (Samson 2006a, 2006b).

Elk Habitat Effectiveness

Forest Plan direction is to apply "Guidelines for Evaluating and Managing Summer Elk Habitat in Northern Idaho" (Leege 1984) to manage for and assess the attainment of summer elk habitat objectives during project-level evaluations (USDA-FS 1987a, Standard #6 page II-18) (see Appendix B of the Forest Plan, same as Leege 1984). Until the Forest Plan is revised, this document will be used to assess elk habitat.

Leege 1984 evaluates elk summer habitat and considers information pertaining to roads, livestock, grazing, cover and forage, and security areas. Servheen et al. 1997 uses the same information from Leege 1984, but updated the analysis to include coefficients for trails and an elk vulnerability estimate.

The basic difference between the Leege 1984 and Servheen 1997 methodologies is that Servheen 1997 considers impacts from trails where Leege is based only on roads. The elk habitat effectiveness (EHE) calculations for the Hungry Ridge project use both road and trail information and coefficients found in Servheen (1997). EHE calculations also follow guidance from Servheen 1997 by adding trails to the EHE calculations.

Both of these models take into account open road densities; livestock; quality, quantity, and distribution of cover; forage; and security areas. All of these attributes were include in the elk habitat effectiveness model calculations for both the existing condition and post-implementation conditions for each alternative analyzed in detail.

Security areas in elk analysis areas are used to define areas where elk can go during times of stress or disturbances. Security area calculations are figured into the Leege and Servheen models and the effects to security areas are discussed narratively. Wildlife security for this project is based on Leege's 1984 (NPNF Appendix B) and Hillis' et al. 1991 definition: an area of at least 250 contiguous acres that are more than ½ mile from an open road (motorized trails were also included in defining security for this project).

The Interagency Guidelines for Managing Elk Habitats and Populations on U.S. Forest Service Lands (Servheen et al, 1997) provides the basis, rationale, calculations, and measures for evaluating projects effects on elk vulnerability (EV). IDFG Game Management Unit (GMU) is the scale at which the EV model should be applied; however, management activities at smaller scales should be considered given their effects on EV components such as hunter access. Elk vulnerability takes into account factors that are beyond the Forest Service's control (hunter density, hunter success, hunting season length and timing, sex and/or antler restrictions).

Old Growth and Snag Habitat

Forest Plan Appendix N (page N-2) states, "Old-growth stands will be identified through the use of stand exam information, aerial photos, and field reconnaissance." The effects analysis on old growth habitat

was done by overlaying GIS layers of identified Forest Plan Management Area 20 (MA20) and other old growth and replacement old growth forest habitats (North Idaho old growth guidelines and forest plan definition) with layers showing proposed vegetative treatments and temporary road construction.

2.3 Resource Indicators

The Mill Creek drainage provides a wide diversity of yearlong or seasonal habitats for different wildlife species. Concerns were raised about the effects of the proposed action on threatened, endangered, or sensitive species; forest plan management indicator species; old growth; and snag habitat. Concerns primarily focus on the adverse consequences of vegetation treatments and road construction.

The wildlife specialist report addresses only those issues and resources specifically identified during scoping (by federal, state, or local agencies; tribes; interested or affected parties; or the Forest Service interdisciplinary team) or where an analysis is required by law, regulation, or agency direction.

The effect on species and their potential habitat, measured in acres, is the primary indicator used in the analysis. For species without modeled habitat, a qualitative discussion of habitat conditions and effects to such habitat is the indicator used in the analysis.

Endangered Species Act (ESA) listed and proposed species, Regional Forester's Sensitive Species & Management Indicator Species (MIS)

Issue: Vegetation management can affect the availability of existing and potential future habitat for ESA listed and proposed, sensitive and MIS wildlife species.

*Indicators f*or species with modeled habitats: effects determination statement (Table 3-24) and acres of available habitat.

*Indicators f*or species without modeled habitats: effects determination statement (Table 3-24) and qualitative discussion of effects to habitat.

*Indicators f*or elk: summer elk habitat effectiveness (EHE) & elk vulnerability (EV).

Old Growth Habitat

Issue: The proposed activities may reduce the availability of old growth habitat in the project area.

Indicator: Acres of proposed actions on National Forest System lands designated as MA20.

Indicator: Acres of proposed actions on National Forest System lands that meet the definition of old growth forest habitat (Forest Plan Old Growth and/or North Idaho Old Growth).

3. Description of the Alternatives

To meet Forest Plan direction relevant to fisheries resources, modifications were made to the action alternatives between release of the DEIS and FEIS. Those modifications reduced the amount of timber harvest and road construction proposed in all action alternatives (Table 2-1). Modifications were not required to meet Forest Plan direction related to wildlife or to reduce the effects to wildlife resources.

In Alternative 2, a reduction in timber harvest (1,453 acres) would leave additional acres untreated, modify fewer acres of nesting and foraging habitats, reduce canopy cover in fewer stands, create fewer openings within the project area, cause less disturbance and displacement of wildlife species, and leave additional snags on the landscape. A reduction in specified/temporary road construction (3 miles/2 miles, respectively) would remove less potential habitat, cause less disturbance and displacement of wildlife during construction, reduce the potential for noxious weed spread, and leave additional snags on the landscape. Alternative 3 and 4 also have reductions. When considering these changes, the conclusions and determinations for wildlife species presented below would not change.

In turn, not treating those acres would create less early seral habitat for species benefitting from opening stands and rejuvenating understories with prescribed burning and timber harvest.

The components of alternatives analyzed in the wildlife analysis are displayed in comparison to the alternatives described in the FEIS in the table below. As stated above, the FEIS alternatives include fewer acres of timber harvest and road treatment; therefore, the beneficial and adverse effects to wildlife resources are less than the beneficial and adverse effects discussed in detail below.

The acreage of treatment proposed within Management Area 20 (MA20) (old growth) is also reduced in the FEIS Alternative 2. 112 of 180 acres of treatment proposed within MA20 in Alternative 2 were dropped, leaving 68 acres of treatment proposed in the FEIS Alternative 2. The old growth analysis was updated to reflect that change.

While the determination for Canada lynx did not change and the project still falls within the scope of activities considered in the 2014 programmatic assessment, the analysis discussed below and programmatic worksheet were updated to reflect the alternatives discussed in the FEIS.

The description of the no action alternative was not affected by the changes to the action alternatives.

Table 2-1. A comparison of the components included in the alternatives analyzed in the wildlife effects analysis and the alternatives described in the Final Environmental Impact Statement (FEIS)

		Alternatives Analyzed in Wildlife Analysis			Alternatives Described in FEIS		
	Alt 1	Alt 2	Alt 3	Alt 4	FEIS Alt 2	FEIS Alt 3	FEIS Alt 4
Total Timber Harvest (acres)	0	8,617	8,569	7,987	7,164	7,084	7,044
Intermediate harvest – Total (acres)	0	2,506	2,328	2,029	1,959	1,901	1,856
Regeneration harvest – Total (acres)	0	6,111	6,241	5,959	5,205	5,183	5,188
Pre-commercial thinning	0	297	297	297	297	297	297
Commercial Thinning	0	1,524	1,583	1,585	1,414	1,521	1,515
Variable Density Improvement	0	683	448	147	247	83	44
Shelterwood	0	1,026	5,262	1081	892	4,314	945
Seed Tree	0	764	0	541	357	0	355
Clearcut with Reserve Trees	0	4,321	978	4,336	3,957	868	3,887
Tractor	0	6,337	6,473	3,050	5,878	5,818	2,866
Cable	0	1,929	1,759	436	1,173	1,153	317
Helicopter	0	351	336	4,501	112	112	3,861
	Alt 1	Alt 2	Alt 3	Alt 4	FEIS Alt 2	FEIS Alt 3	FEIS Alt 4
Shelterwood Harvest in MA20 (acres)	0	9	0	0	9	0	0
Intermediate Harvest in MA20 (acres)	0	59	0	0	59	0	0
	Alt 1	Alt 2	Alt 3	Alt 4	FEIS Alt 2	FEIS Alt 3	FEIS Alt 4
Hand fuels treatment (acres)	0	10	10	10	10	10	10
Total Landscape burning (acres)	0	12,372	12,372	0	12,372	12,372	0
Landscape burning (acres)	0	8,764	8,918	0	8,764	8,918	0
Landscape burning with Veg. treatments overlap (acres)	0	3,608	3,454	0	3,608	3,454	0
	Alt 1	Alt 2	Alt 3	Alt 4	FEIS Alt 2	FEIS Alt 3	FEIS Alt 4
Block 1 (acres)	0	2,744	2,744	0	2,645	2,645	0
Block 2 (acres)	0	1,342	1,342	0	1,342	1,342	0

Block 3 (acres)	0	3,117	3,117	0	3,117	3,117	0
Block 4 (acres)	0	2,400	2,400	0	2,400	2,400	0
Block 5 (acres)	0	1,130	1,130	0	1,130	1,130	0
Block 6 (acres)	0	1,639	1,639	0	1,639	1,639	0
	Alt 1	Alt 2	Alt 3	Alt 4	FEIS Alt 2	FEIS Alt 3	FEIS Alt 4
New Specified Road Construction (miles)	0	12	7	0	9	6	0
New Temporary Road Construction	0	5.6	5.6	0	5.6	5.6	0
Road Reconstruction	0	0.9	0.9	0	0.9	0.9	0
Road Reconditioning	0	5.2	0	0	5.2	0	0
Road Maintenance	0	25	29	0	23	26	0
Road Long Term Storage	0	14.7	19.3	0	14.7	17.3	0
Road Decommissioning	0	9.8	9.8	0	8.6	8.6	0
Road 9408	0	2.1	0.4	0.4	2.1	0.4	0.4
Road 9408A	0	34	36	32	34	36	32
Un-numbered roads	0	31	31	31	31	31	31
New temporary road miles, decommissioned following use	0	4	4	4	4	4	4
Temporary road miles on existing templates, decommissioned following use or return to trail	0	25	25	33	25	25	33
Decommission roads (Recontour)	0	23.5	23.6	31.4	23.5	23.6	31.3
Decommission (Abandon)	0	0.5	0.6	0.6	0.5	0.6	0.6
Decommission Road to Trail	0	0.6	0.6	0.6	0.6	0.6	0.6
Use of Private Road (miles)	0	1.8	1.8	1.8	1.8	1.8	1.8
	Alt 1	Alt 2	Alt 3	Alt 4	FEIS Alt 2	FEIS Alt 3	FEIS Alt 4
Road/Culvert Improvements	0	17	17	17	17	17	17
Improve for Fish Passage	0	11	11	11	11	11	11
Improve for Size	0	6	6	6	6	6	6
Trail/Stream Crossing Improvements	0	2	2	2	2	2	2
Riparian planting (acres)	0	87	87	87	87	87	87

Meadow Restoration (acres)	0	0	0	107	0	0	107
	Alt 1	Alt 2	Alt 3	Alt 4	FEIS Alt 2	FEIS Alt 3	FEIS Alt 4
Project-Specific Amendments	0	2	1	1	1	0	0
Mechanical treatment in Management Area 20– Old Growth	0	1	0	0	1	0	0
Soil Standard #2	0	1	1	1	0	0	0

3.1 No action Alternative

Under the No Action Alternative, project-related actives would not occur. Previously authorized activities, including wildfire suppression, would continue, but forest restoration treatments would not.

No vegetative treatments, including timber harvest or prescribed fire would occur with this alternative. The overall existing condition would remain unchanged. Current vegetative processes would continue unless wildfires occur. Large-diameter, early-seral tree species (ponderosa pine, western larch, and Douglas-fir) would continue to experience ingrowth of shade-tolerant species, thus reducing the quality of habitat for species dependent on these seral communities. These communities have heavy fuel loads and are at risk of being lost due to large-scale wildfires, which in turn reduces habitat for some wildlife species, yet improves conditions for others.

With succession, forest canopies would continue to close in, creating more habitat for species dependent on dense forest communities. However, the quality of that habitat may be poor due to the stagnant understories that may impede the maneuverability of many species and negatively affect foraging habitat. Small openings or vegetative diversity would only be created by gaps created by fire and/or trees being killed and/or falling down as a result of wind, age, insects, or disease.

Access issues would not be addressed and road densities would not be reduced under the No Action alternative.

3.2 Action Alternatives – Alternative 2, Alternative 3, & Alternative 4

The Hungry Ridge Restoration project is located on Hungry Ridge, bounded by Johns Creek and Mill Creek, on National Forest System administered lands in portions of: T27N, R04E; T28N, R04E; R29N, 04E; (Boise Meridian) in Idaho County, Idaho.

The purpose of the project is to restore a more diverse and resilient forest structure, with a range of age classes, size classes, habitat complexity (diversity) and disturbance patterns that more closely emulate the results of natural disturbance. This would reduce the intensity of subsequent wildland fire events and increase the opportunities for fire management strategy and tactics to be successful, while providing for firefighter and public safety. Wildlife habitat will be improved for ungulates and increased for species favoring open understories (i.e., goshawk, pygmy nuthatch, and flammulated owl). Timber harvest and prescribed burning is proposed to help achieve some resource management objectives as well as provide a source of wood products for local industry and a source of jobs for local residents.

Please refer to the FEIS for a complete description of all action alternatives.

4. Affected Environment and Environmental Consequences

Past land management activities, most importantly timber harvest, fire suppression, wildfires, and road construction, have substantially affected the landscape in many parts of the project area. Fire suppression, road construction, and timber harvest have caused a shift in many of the natural processes in the project area, as well.

Please note, there are no cumulative effects associated with the no action alternative because there are no direct or indirect effects resulting from the no action alternative. No further discussion of this topic will occur.

4.1 Federally Listed Species

The U.S. Department of Interior, Fish and Wildlife Service (USFWS) requires the Forest Service to analyze threatened species for which there may be suitable habitat in a project area. In Idaho County, the USFWS has indicated that there may be suitable habitat for Canada lynx (*Lynx canadensis*).

Canada Lynx

The Canada lynx was listed as a threatened species under the Endangered Species Act in 2000. The Nez Perce National Forest is recognized as secondary, unoccupied Canada lynx habitat and none of the Nez Perce National Forest has been identified as critical habitat by the USFWS (USDA Forest Service 2007a, p. 3-5; USDA Forest Service 2007b, pp. 7 and 29; USDA Forest Service and USDI Fish and Wildlife Service 2006).

Lynx are associated with relatively high-elevation moist conifer forests. Lynx habitat includes mesic coniferous forests that experience cold, snowy winters and provide a prey base of snowshoe hare. It primarily consists of lodgepole pine, subalpine fir, and Engelmann spruce forests, but may also consist of cedar hemlock forests in northern Idaho (USDA FS 2007 NRLMD ROD p. 12). Lynx typically occur above 4,000 feet elevation in Idaho. Lynx utilize Engelmann spruce, subalpine fir, or lodgepole pine habitats providing a mosaic of forest age classes.

Lynx denning habitat is most often characterized as mature forests in moist or wet habitats. Down logs are important for denning habitat. Forested habitats used for denning are between one and five acres, and are connected by travel corridors through mature forest. These relatively small denning sites are available in the project area. These small sites indicate the importance of managing within stand habitat diversity, snag retention, green tree replacements, and legacy tree retention.

Population Trends: Lynx populations occur at naturally low densities and very few museum or trapping records exist for Idaho County (McKelvey et al. 2000). The lynx has a global rank of G5 (secure) and an Idaho State ranking of SNA (conservation status rank is not applicable) (NatureServe [accessed February 26, 2019]); (Idaho Fish and Wildlife Information System [accessed February 26, 2019]).

Affected Environment

The Hungry Ridge project is located within one lynx analysis unit (LAU3050602). The majority of the project area is not within mapped lynx habitat (lower elevation habitats). Table 3-1 displays the current estimates for denning, foraging, and unsuitable habitat in the LAUs associated with the Hungry ridge project.

Table 3-1. Existing lynx habitat

LAU Name	LAU Total Acres	Acres of Habitat	Denning Habitat Acres (% Habitat)	Foraging Habitat Acres (%Habitat)	Unsuitable Habitat Acres[1] (%Habitat)
03050602	45,123	14,827	2294 ac (15%)	12,533 ac (85%)	0 ac (0%)

[1]Unsuitable habitat is areas that have had past timber harvest that regenerated forest stand structure and stand-replacing fires in the last 15 years. No recent regeneration harvest or wildfires have occurred in the project area in the last 15 years in lynx habitat. Habitat that was originally mapped as unsuitable has now grown to a state that is now considered foraging.

At this time, no reproduction of lynx has been documented on the Nez Perce National Forest (NPNF). However, if lynx were to den on the NPNF, LAU3050602 contains about 15% denning habitat and adequately provides for lynx habitat requirements. The habitat features that are selected by lynx for denning are at a site-scale, and may consist of 1-2 large-diameter logs or small-diameter log piles in areas with high horizontal and vertical cover (Squires et al. 2008). As kittens develop, female lynx will move kittens to areas with down woody material, so they can leave kittens unattended while foraging for prey. In managing for lynx across a large landscape, it is important to have pockets of down woody material interspersed among foraging areas for rearing of kittens, not necessarily large areas of down

woody material. Thus, an LAU with 15% of denning habitat would adequately provide for lynx habitat requirements if lynx denned on the NPNF.

No Canada lynx sighting records has been reported in the project area (IDFG 2016). Several sightings have been recorded over 5 miles from the project area. The sightings are reported by people with unknown ability to correctly identify species (bobcat vs. lynx) and are over 10 years old. Lynx surveys conducted on the Forest in 2007 and 2013 found no evidence of lynx (Ulizio et al. 2007, USDA 2013). There is no recent evidence of lynx are breeding, denning, or rearing young on the NPNF, but that lynx may move through the NPNF during dispersal events.

Environmental Consequences – Direct and Indirect Effects

The Northern Rockies Lynx Management Direction established standards and guidelines for the management of lynx. Standards are management requirements used to meet desired conditions. Standards were used in those situations where it was desirable to provide sideboards for project activities. To deviate from a standard, a plan amendment would need to be completed. Guidelines were used for those risk factors that may have possible adverse effects to individual lynx. The NRLMD states, "When National Forests are designating management actions in unoccupied mapped lynx habitat they should consider the lynx direction." The direction provided in the NRLMD is applied to lynx habitat at the lynx analysis unit (LAU) scale. In Table 3-2, the alternatives for the Hungry Ridge project are evaluated for consistency with the NRLMD Standards for Vegetation (VEG) Management activities and practices from the NRLMD ROD (2007).

The Hungry Ridge project would modify forest stand conditions and characteristics such as stocking and species composition in order to maintain or improve health of the stands. Treatments would promote forest resilience and restore fire tolerant species that were once more prevalent across the landscape.

Alternative 1 – No Action

No vegetative treatments would occur with this alternative and current vegetative processes would continue. Therefore, there would be no direct or indirect effects to lynx or their habitat.

This alternative would have no direct or short-term indirect effects on transient Canada lynx because no treatments would be conducted. Forest succession would continue in the analysis area, as modified by natural processes. Existing younger patches would continue to grow and mature. Insect infestations and root rot would continue causing numerous dead trees to fall to the ground, which may provide quality denning habitat if downed logs are densely layered. Because the events and processes that might affect forest succession (and therefore lynx habitat) in the analysis area are either unknown or highly variable in frequency and size, the long term indirect effect on lynx of Alternative 1 is not predictable.

Alternative 2, 3, and 4 – Action Alternatives

Alternative 2 proposes to treat approximately 1,585 acres of lynx habitat. Regeneration harvest would occur in approximately 1,544 acres of lynx habitat (denning-252 acres, foraging-1,280 acres).

Alternative 3 proposes to treat approximately 1,584 acres of lynx habitat. Regeneration harvest would occur in approximately 1,543 acres of lynx habitat (denning-252 acres, foraging-1,279 acres).

Alternative 4 proposes to treat approximately 1,563 acres of lynx habitat. Regeneration harvest would occur in approximately 1,523 acres of lynx habitat (denning-231 acres, foraging-1,279 acres).

Regeneration harvest activities would render these areas as unsuitable habitat for about 20-25 years until these areas grow to a height and density that lynx prey species prefer. The amount of denning substrate (existing or future down wood) would not be adequate to provide denning habitat for lynx in these newly created stands. Intermediate harvest would occur in about 41 acres of lynx habitat under the action alternatives.

It is unlikely that the proposed project would have adverse impacts to transient lynx since the Lynx Conservation Assessment and Strategy (Ruediger *et al*. 2000) described resident lynx as being generally tolerant of humans and their management activities in forested landscapes. There is limited information on how a dispersing lynx reacts to changes in landscape connectivity, but some conclusions can be drawn. Ruggiero *et al*. (2000) reported "Lynx readily move across landscapes fragmented by

conventional industrial forestry" and even further, "documented lynx movements have involved crossing open valley bottoms and large rivers", thus concluding that lynx can move long distances and are capable of these dispersal events. Although existing data was sparse, the data did not indicate that vegetation management or logging has impacted resident lynx or for that matter, transient lynx. It could be inferred that a threshold may be present for resident lynx. The thresholds established within the NRLMD for VEG S1 (30%) or VEG S2 (15%) were likely generated from this type of information. The Hungry Ridge Action Alternative maintains adequate habitat for a transient lynx and does not exceed the thresholds for VEG S1 or VEG S2, and would have minimal direct or indirect impacts on transient lynx.

The Action Alternatives are consistent with the Northern Rockies Lynx Management Direction. The following analysis will evaluate the direct and indirect effects of the project on 'transient' or 'dispersing' lynx, or more specifically, lynx that may be incidental to the area or present during dispersal events. This analysis focuses on transient lynx since no lynx have been documented breeding on the NPNF. The areas that are not designated as 'core lynx areas' are considered 'peripheral areas', which are important in providing habitat to support lynx during dispersal movements or other periods, which then allow lynx to return to core areas (USDA FS 2007 NRLMD ROD pg. 31-32; U.S. FWS Biological Opinion, p. 59). These peripheral areas have secondary habitat and would include the Nez Perce National Forest. The lynx records in peripheral areas are sporadic and generally correspond to periods following cyclic population highs in Canada (USDA FS 2007 NRLMD ROD pg. 31-32; USDI FWS 2007 Biological Opinion, p. 59). In the Biological Opinion, FWS hypothesized that the peripheral areas may enable successful dispersal of lynx between populations or subpopulations, but the FWS did not have enough information to clearly define the relative importance of secondary or peripheral areas and indicated that In treatment units, habitat connectivity may be disrupted at a local level by regeneration harvest or intermediate harvest treatments, but overall landscape connectivity would continue to allow lynx movements through this landscape in conjunction with riparian areas as well as in mature and old growth forests. The proposed project would not regenerate more than 15% of lynx habitat in LAU3050602 (Table 3-2) (VegS2).

Table 3-2. Lynx Habitat Treated by LAU in the project area

LAU	Total Lynx Habitat In LAU (Acres)	Alternative	Unsuitable Habitat[1] (Acres) (%)	Habitat Changed to Unsuitable - Regeneration harvests associated with the Hungry Ridge Project[2] (Acres) (%)	Total Unsuitable Habitat Percent[3]
3050602	14,827	Alternative 1	0 (0%)	0 (0%)	0%
		Alternative 2	0 (0%)	1,544 (9%)	9%
		Alternative 3	0 (0%)	1,543 (9%)	9%
		Alternative 4	0 (0%)	1,523 (9%)	9%

[1]These acres are mapped as lynx habitat that do not provide sufficient vegetation to be used by snowshoe hare and lynx (within last 15 years). No additional regeneration harvest allowed if more than 30% of lynx habitat in an LAU is in a stand initiation structural stage that does not provide winter snowshoe hare habitat.

[2]This is the amount of mapped lynx habitat within the LAU that would change to unsuitable due to proposed timber harvest (regeneration cuts). Harvest activities would occur in what is modeled as lynx habitat.

[3]This is total amount of lynx habitat that would be considered to be unsuitable habitat due to past and proposed regeneration harvest. No more than 15% of lynx habitat on NFS lands in an LAU may be changed by regeneration harvest in a 10 year period.

The potential for a transient lynx to be present while implementation is occurring is extremely low as the Nez Perce National Forest is not considered to be occupied by lynx. Should a transient lynx be present in nearby areas when tree removal takes place, minor short-term disturbance impacts are possible. It could

be perceived that lynx may be directly impacted by the noise created by heavy machinery, if present. Direct effects could be related to disturbance of individuals with lynx avoiding the area during implementation. If disturbance to individuals does occur, it would not significantly interrupt critical life history factors such as foraging for food, due to the difference in activity periods since lynx primarily forage at night or crepuscular periods. Further, given that project sites are localized areas that are mostly in timber management areas, minimal disturbance is anticipated. Overall, the short-term direct impacts are anticipated to be outweighed by the indirect, beneficial impacts to lynx by improving habitat quality over the mid- and long-term as discussed in the following section.

No pre-commercial thinning would occur in lynx habitat under any alternative and complies with NRLMD VEG S5.

Though forest roads can change landscape connectivity for many wildlife species, preliminary information suggests lynx do not avoid roads (Ruggiero et al. 2000). After the Lynx Conservation Assessment and Strategy (LCAS) was published in 2000, the FWS published a Clarification of Findings in the Federal Register commonly referred to as the Remand Notice, which stated, “We found no evidence that some activities such as forest roads, pose a threat to lynx” (NRLMD, ROD p.3). Lynx-vehicle collisions have been found on paved, high-speed highways with high volumes of traffic (e.g., reintroduced lynx in Colorado and Maine). Forest roads generally have low speeds and are gravel. Both new permanent and temporary road construction is planned under this project. However, only temporary road construction is planned within lynx habitat. Any new temporary roads constructed will be decommissioned after use, so a short-term loss of habitat connectivity can be anticipated, but will restored after project is implemented.

A linkage area is defined in the NRLMD, Record of Decision as “providing connectivity between blocks of lynx habitat. Linkage areas occur both within and between geographic areas, where basins, valleys, or agricultural lands separate blocks of lynx habitat, or where lynx habitat naturally narrows between blocks.” Linkages are ‘officially’ designated in collaboration with the Forest Service and US Fish and Wildlife Service to provide for connectivity across areas that are generally non-forested. The Hungry Ridge project area does not contain any official linkage areas.

Road and watershed improvements (such as culverts or road reconstruction) are not expected to impact lynx or their habitat. Proposed road and trail reconstruction/improvements, hand thinning, meadow restoration, watershed improvements (plantings, culverts), and road decommissioning activities would not have an appreciable effect on lynx or their habitat, other than potential short-term disturbance/displacement effects during implementation.

Approximately 3.3 miles of temporary road construction would occur within lynx habitat. These areas would be decommissioned and revegetated following use. Therefore, the effects would be minimal and the loss of vegetation would be temporary.

In the following section, the proposed action for the Hungry Ridge project is evaluated for consistency with the NRLMD Standards for Vegetation (VEG) Management activities and practices from the ROD (USDA FS 2007) and further evaluated in Table 4.

- Standard VEG S1 - If more than 30 percent of the lynx habitat in an LAU is currently in a stand initiation structural stage that does not yet provide winter snowshoe hare habitat, no additional habitat may be regenerated by vegetation management projects.
    - Currently there is no unsuitable habitat in LAU3050602.
    - Regeneration harvest within lynx habitat ranges from 1,523 ac (Alt. 4) to 1,544 acres (Alt. 3). These would be set back to the stand initiation phase, which would not provide winter snowshoe hare habitat for about 20-25 years. LAU3050602 would not exceed the 30% standard for lynx habitat not providing winter snowshoe hare habitat (Table 3-2).
- Standard VEG S2 - Timber management projects shall not regenerate more than 15 percent of lynx habitat on NFS lands in an LAU in a ten-year period.
    - Timber management activities will not regenerate more than 15% of lynx habitat in LAU3050602 in a ten-year period. Current proposed timber harvest activities would regenerate approximately 9% of the lynx habitat in LAU 3050602 (Table 3-2).
- Standard VEG S5 - With relatively rare, specific exemptions, pre-commercial thinning will not occur in lynx habitat.

    - No pre-commercial thinning is proposed in lynx habitat within the Hungry Ridge project area.
- Standard VEG S6 - With relatively, rare, specific exceptions, vegetation management projects will not reduce snowshoe hare habitat in multi-story or late successional forests. Exception 3 allows for incidental removal during salvage harvest (e.g., removal due to location of skid trails) as long as VEG S1 is met. Currently, VEG S1 is being met in LAU3050602.
    - There are no multi-storied stand conditions within treatment units.

Cumulative Effects

The cumulative effects are assessed across the Lynx Analysis Unit (LAU3050602), which totals 45,123 acres.

The period for this analysis includes the short-term (five to seven years), during which the direct and indirect effects of the project would occur, and the long-term (up to 150 years), the amount of time required for stands to develop into a mature or older condition and snags to develop into a condition that provides habitat for species that prefer older forest conditions.

Past, Present, and Foreseeable Future Actions

Ongoing actions within the proposed activity areas consist of recreation, road maintenance, fire suppression, mining, watershed restoration, livestock grazing, and weed treatments.

Alternatives 2, 3, and 4 – Action Alternatives

The past and ongoing activities are described in detail in the EIS and have contributed to current habitat conditions. Fire, wind, insects, and disease have played an important, historic role in maintaining the mosaic of forest successional stages that provide habitat for both snowshoe hare and lynx. With the advent of fire suppression, vegetative mosaics and species composition have been altered and may have reduced the quality and quantity of habitat for snowshoe hares. Denning habitat is becoming more extensive at the expense of foraging habitat. However, past timber harvest has left a mosaic of habitats on the landscape, but they are not characteristic of the patterns that occurred historically under a more natural disturbance regime. The majority of past harvest units have created simple, uniformly-shaped, small to medium-sized patches (<40 acres) that are lacking snags and large fire-resistant trees. Gone in these areas are the important snag, down wood, and residual large tree components that provide the structural diversity preferred by lynx for denning habitat. Past activities may have altered the availability of denning habitat, forested connectivity, and prey habitat for lynx. Across the project area, open roads facilitate access for trappers and firewood cutters. Road construction has fragmented and degraded riparian and ridgetop areas that provide important travel corridors.

Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments. Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements.

Motorized recreation and dispersed-camping activities would change in the future, but the effects to lynx and their habitats would be limited to designated existing routes and dispersed-camping areas following implementation of the Nez Perce National Forest Travel Management Plan decision (DRAMVU). Access restrictions associated with the reduction of cross country travel associated with the DRAMVU project would, in some instances, improve security.

Watershed restoration/improvement projects are considered to be beneficial by improving security via road decommissioning.

Ongoing road/trail maintenance, grazing, weed management and other recreational activities are not expected to affect the lynx.

Conclusion

Past and proposed actions are accounted for and discussed under the direct and indirect effects sections above. All past vegetation management projects and the impacts to lynx habitat have been incorporated and are shown in Table 3-2. Cumulatively, there would be a short-term displacement/disturbance of prey species with the implementation of activities. Trees would be removed that over time would have provide denning substrate for lynx. Foraging habitat may increase with the reduction in overstory canopy; however, this may be limited until the stands reach the height and density that prey species prefer.

Access restrictions associated with the reduction of cross country travel associated with the DRAMVU project would help to alleviate the loss of snags and logs taken by firewood gatherers and in some instances improving security. Ongoing permitted cattle grazing is not expected to change lynx habitat conditions. Timber management activities associated with the Hungry Ridge project would not regenerate more than 15% of lynx habitat in an LAU in a ten-year period (Table 3-2). Harvest activities from these projects would increase unsuitable habitat in LAU3050602 to 9%, well below the NRLMD VEG S2 standard (Table 3-2).

The Hungry Ridge Project would not result in a net increase of groomed or designated over-the-snow routes or snowmobile play areas. Project related impacts are considered to be minor in terms of the amount of lynx habitat being treated within the LAU and the lack of confirmed sightings in the project area.

The Hungry Ridge Project is consistent with the standards and guidelines in the Northern Rockies Lynx Management Direction. There appears to be little risk to lynx populations on the Nez Perce National Forest resulting from implementation of the Hungry Ridge project. The actions taken in the project are fully compatible with recovering lynx and consistent with maintaining habitat.

Existing Canada lynx habitat and snowshoe hare winter habitats are expected to remain available within the LAU. No measurable effects to lynx populations at the Forest or regional scale, or alteration of current population trend, are expected from any of the alternatives based on the widespread availability of suitable habitats across the Forest and Region (USDA FS 2007).

Alternative 1 will have "*No Effect*" on transient Canada lynx.

The proposed federal actions described for Alternatives 2, 3, and 4 are "*Not Likely to Adversely to Affect*" transient Canada lynx and/or its habitat. This determination is based on:

- All objectives, standards and guidelines in the 2007 NRLMD would be met.
- If transient lynx are present, negligible, short-term direct effects may occur related to disturbance (noise and mechanize equipment) during implementation of vegetation treatment. Although treatments are proposed in modeled lynx foraging and denning habitat, the amount of habitat being treated within the LAU is negligible.
- Travel habitat would be maintained across the LAU. Lynx, if present, are potentially transient animals traversing across the forest, thus no long-term impacts to individual lynx and their habitat are anticipated.
- Forest roads generally have low speeds and are gravel, and do not pose a threat to lynx. Both temporary and permanent road construction are planned with this project. However, only temporary road construction would occur in lynx habitat. Any new temporary roads constructed will be decommissioned after use.
- The proposed Federal actions, described under Alternatives 2, 3, or 4, are not occurring within designated critical habitat, so the project would have no effect on critical habitat.

The Hungry Ridge project is consistent with those activities and effects considered in the "Programmatic Biological Assessment for Activities that are Not Likely to Adversely Affect Canada Lynx.

4.2 Sensitive Species

The Northern Region Sensitive Species List, which contains those species identified as sensitive by the Regional Forester, was last updated in February 2011 (USDA Forest Service 2011). This section considers those sensitive species (or their habitats) that are known or suspected to occur on the Nez Perce National Forest within the vicinity of the Hungry Ridge project area (Table 1-1).

Western Toad

The analysis area for the western toad is the project area. Western toads use moist areas such as streams, ponds and lakes for breeding, foraging and overwintering habitat. They prefer shallow areas with mud bottoms and high temperature areas, often in sites with vegetation present for breeding. A wide variety of upland habitats are used during non-breeding times. Riparian areas serve as migratory or dispersal corridors. Important upland habitat structure needed includes down woody debris where individuals can access moist microhabitats during the hot daytime summer hours to avoid desiccation.

There are no recent documented sightings of this species within the project area. Based on habitat availability, it is likely that low levels of use are occurring, although site-specific surveys have not been conducted.

There is very little long-term monitoring data for western toad populations in Idaho. The western toad is apparently secure across its range and listed as imperiled in Idaho (G4/S2) (Idaho Fish and Wildlife Information System [accessed February 26, 2019]; NatureServe [accessed February 26, 2019]). Declines in abundance have been reported throughout the species' range due to disease and parasites. Based on a study in north-central Idaho, the *atrachochytrium dendrobatidis* pathogen is known to occur on the forest (Goldberg not date).

Affected Environment

The western toad is a sensitive species on the Nez Perce National Forest and is known to occur on the Nez Perce Forest. Since western toads use a variety of habitats, breeding and non-breeeding use could occur in the project area.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments would occur with this alternative and current vegetative processes would continue. Fuel loads along streams and RHCAs would continue to increase and may expose these environments to intense fires. Large-scale fire events in RHCAs and elsewhere in the project area could increase seasonal run-off and sediment delivery to streams, and reduce large woody debris recruitment and stream shading. This in turn could have negative effects on western toads and toad habitat.

Alternatives 2, 3, and 4 – Action Alternatives

Fuel loading within RHCAs would continue under all action alternatives and could expose toads and toad habitat to intense fires; however, by reducing fuel loads outside of RHCAs, fires might not be as destructive to moist environments as under the no action alternative.

Proposed harvest and slash treatment activities are likely to alter existing non-breeding habitat for western toads for the short-term. Regeneration harvest with underburning removes overstory trees and ground cover, resulting in warmer and drier exposed soils. Intermediate harvest and prescribed burning activities (slash and natural fuels treatments) would retain the larger overstory trees, leaving ground-level habitat more protected, with better daytime refugia sites for toads. Based on this species' ability to occupy a wide variety of habitats, western toad use could still occur, although at low levels. As vegetation recovered within a few years, habitat would become increasingly suitable and use would be expected to increase. If adult western toads were present, individual mortality could occur during harvest or underburning from heat or consumed woody material, or by vehicles or machinery used for logging or roadwork.

Design features that include riparian buffers on all streams, ponds, springs, or seeps in treatment units will protect these suitable breeding sites. However, roadside ditches that hold water long enough into the summer to provide breeding sites would not be protected by RHCAs unless they were associated with streams or other protected sites. Individual toads or local populations occupying these ditches could be affected by site-specific road reconstruction if it occurs while tadpoles were still dependent on water availability.

Individual toads could be killed by prescribed fires, motor vehicles, or heavy machinery associated with the proposed actions.

Meadow restoration is proposed at Merton Creek Meadows and American Creek (Buck Meadows). The intent is to reduce conifer encroachment in the meadows to maintain the meadow environment. Activities include: removing conifers that are less than or equal to 10 inches dbh via hand thinning. The slash would be bucked into smaller pieces, and hand piled. Larger trees (5-10" dbh) would be felled towards and/or across the creeks for woody debris recruitment. This action may improve breeding conditions for western toad.

Implementing watershed improvement projects (road/trail reconstruction, culverts, road decommissioning) associated with the action alternatives would cause a temporary increase in sediment in the short-term, but there would also be a long-term reduction in sediment. It is not known how or if sediment levels affect western toads, but it is reasonable to think that improvements to overall watershed quality would be beneficial to this water-dependent species.

Landscape burning, riparian planting, meadow restoration, road construction, treatments adjacent to private land, and road decommission would not occur within RHCAs and therefore, would not have an impact on western toads or their habitat.

Cumulative Effects

Geographic Boundary

Based on the ecology of western toad, the cumulative effects analysis area is the Hungry Ridge project area. The timeframe for the cumulative effects assessment is 20 years. This is because it is the typical length of time for dense shrub and young conifer to re-establish following stand replacing disturbance and

toads are associated with moderate to dense undergrowth, slow moving streams and mud bottomed shallow pools.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities listed in the EIS contribute to the current habitats conditions. Timber harvest and salvage, grazing, insect epidemics, fires, fire suppression, mining, and road construction and maintenance can cumulatively affect western toads through soil compaction, changes in vegetative cover, altering stream channels, or by changing the quantity and quality of water flowing into wet meadows. Past harvest practices that involved removing forest vegetation along streams and wetlands left these sites vulnerable to hydrologic and vegetative changes. Although fires probably rarely burn in this species' breeding habitats, water quality and quantity varies after large fires upstream and could affect local toad populations. Fire suppression has created denser forests which tend to burn hotter, and hotter fires tend to be more destructive. Livestock grazing is likely to continue on USFS allotments and on private lands, and may have had past effects.

Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, and outfitters and guides. Road, trail, and watershed improvement projects could improve habitat conditions for the western toad. Adjacent timber harvest and temporary road building could degrade habitat. The other activities are not expected to affect the western toad or their habitat.

Noxious weed treatments would occur in the project area under the current weed management plan in the future. Generally, spot applications should not affect any wildlife species of concern due to avoidance by spray crews. The risk associated with herbicide treatment is the potential that wildlife species, particularly amphibians, would accidentally be sprayed. The design criteria specified in Chapter 2 would provide adequate protection for wildlife species by minimizing the amount and type of herbicide to which amphibians could be exposed by restricting application methods and applying buffer distances along streams, ponds, seeps, and wetlands.

Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements. These actions are not expected to affect the boreal toad or their habitat and in the long run may be beneficial.

Alternatives 2, 3, and 4

The Hungry Ridge project is expected to have minor direct or indirect impacts to the western toad and its habitat. It is unlikely to add measureable cumulative impacts to individuals. Affects to habitat from the Hungry Ridge project, would not add substantial impacts to those impacts from other projects. Regeneration harvest with underburning removes overstory trees and ground cover, resulting in warmer and drier exposed soils.

There would be long term benefits to toad habitats from watershed restoration activities to reduced sediment. The reduction of off-road vehicles associated with the DRAMVU project would also contribute to improved watershed conditions.

Cumulatively, many acres of potential upland toad habitat could be impacted. Individual toads could be killed from the vegetative changes, prescribed fires, motor vehicles, and heavy machinery associated with these proposed actions.

Conclusion

Past, present, and future actions can affect western toad habitat in the project area as well as across the Nez Perce National Forest. Although individuals or localized populations can be affected, none of the proposed alternatives should affect populations of western toads at the project or Forest level.

All alternatives would comply with applicable Forest Plan standards pertaining to riparian habitats. The PACFISH buffers that would protect the highest quality toad habitats have been incorporated by amendment into the Forest Plan. All alternatives would implement these buffers as required by the Forest Plan. Alternative 1 would have "*No Impact*" on the western toads, while **Alternatives 2, 3, and 4**

"*May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the populations or species.*"

Gray Wolf

The analysis area for the gray wolf is the project area. Three aspects of wolf habitat were reviewed: security of dens and rendezvous sites, prey base (elk), and security from human disturbances and harm. The gray wolf occupies diverse habitats, from open meadows to heavily forested stands. Wolves occupy broad territories and travel extensively in search of prey, generally medium to large ungulates, especially elk. They are adaptable to human and land management activity in general, but sensitive to disturbance at denning and rendezvous sites. Wolves are known to inhabit the project area.

The gray wolf has a global rank of G4/G5 (secure) and an Idaho State ranking of S4 (not rare and apparently secure) (NatureServe [accessed February 26, 2019]); (Idaho Fish and Wildlife Information System [accessed February 26, 2019]).

Affected Environment

Wolf populations have multiplied dramatically throughout the state and have been removed from the list of threatened species under ESA. Based on local sightings, sign and formal monitoring results, wolves are abundant, widely distributed on the Forest, and increasing numbers of reports suggest local populations of wolves continue growing.

The Hungry Ridge project area supports primarily year round habitat for big game species. The most important limiting habitat factor for wolves is believed to be human-caused mortalities, such as shootings and vehicle-strikes.

Environmental Consequences – Direct and Indirect Effects

Potential effects of the alternative are associated with changes in big game habitat and exposure to human disturbance. All alternatives would continue to allow trail and highway vehicles during the summer months and snowmobiles during the winter. Such access increases the opportunity for people to observe and possibly shoot wolves that might be in the area. The quality and quantity of forage for prey species should be highly palatable and rich in nutrients for the next couple of years. The potential for the spread of noxious weeds would decrease the quality of the forage within the fire area.

Alternative 1 – No Action

No vegetative treatments would occur with this alternative. Current vegetative processes would continue unless wildfires occur.

The overall existing condition would remain unchanged. There would be no changes in road densities or access restrictions. No big game winter or summer range improvements would occur. The amount and condition of forage available to the ungulate prey base would continue to decline.

Alternatives 2, 3 and 4 – Action Alternatives

The temporary increase of human activity in the project area associated with harvest and vegetative treatments could increase the possibility of human-wolf interactions. The construction of temporary roads and reconstructed roads could displace wolves and/or their prey during construction and use. As mitigation, all current access closures would be maintained as part of the proposed project. Several ridgetops and saddles would be impacted with the permanent loss of vegetation with the construction of new permanent roads.

There is little risk of direct or indirect effects to individual wolves from any of the action alternatives because of their high mobility and large territories. Any wolves in the analysis area would avoid areas of active treatment.

Timber harvest and burning in some stands would reduce available overstory cover for wolves and big game species. Under the action alternative, certain portions of the project area would improve elk forage habitat. Because of disturbance and displacement, there could be a minor effect on the habitat use patterns of prey species, but their population levels or availability as prey would not be affected.

Natural fuels treatments through the use of prescribed fire would have a positive effect in setting back succession, favoring early-seral habitats for prey species. Prescribed underburns would reduce some of the shade tolerant tree species and provide openings. Burns would also reduce the encroachment of conifers in currently existing natural openings, grassland and shrub fields. Prescribed fire would reduce competition for nutrients and result in greater production of understory species as light and moisture become available. The season of burn can influence ground vegetation and the amount of understory vegetation consumed.

Proposed road and trail reconstruction/improvements, hand thinning, meadow restoration, watershed improvements (plantings, culverts), and road decommissioning activities would not have an appreciable effect on wolves or their habitat, other than potential short-term disturbance/displacement effects during implementation.

Road decommissioning activities would improve security for wolves and their prey.

Based on the nature and duration of the proposed project, the mortality risk for wolves would remain low. Key wolf habitat areas, such as den sites, rendezvous sites, or whelping sites, would not be affected.

Cumulative Effects

Geographic Boundary

The area for assessing cumulative effects on the gray wolf is the Hungry Ridge project area. The time frame for cumulative effects is 20 years, which is about the time it takes for new plantations to restore elk hiding cover in the harvested areas.

Past, Present, and Foreseeable Future Actions

Reducing the exposure of gray wolves and ungulate prey to humans is a factor in maintaining high quality big game habitat and reducing the risk of incidental wolf mortality. The Hungry Ridge project area contains established human activities and developments including roads, timber harvest, home sites, grazing, and recreational opportunities. In addition, the project area receive heavy hunting pressure for deer, elk, and moose, which not only affects the wolf prey base, but increases the number of wolf-human interactions. The most important cumulative effect to gray wolf recovery in Idaho is incidental mortalities from shooting, trapping, and vehicle strikes. This probability increases with increased road access. Existing road access closures would remain in effect. Human access, available cover, and public attitudes largely determine mortality risk to wolves.

Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments. Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements. These actions are not expected to adversely affect the gray wolf or their habitat.

Motorized recreation and dispersed-camping activities would change in the future, but the effects to wolf and their habitats would be limited to designated existing routes and dispersed-camping areas following implementation of the Nez Perce National Forest Travel Management Plan decision (DRAMVU). Access restrictions associated with the reduction of cross country travel associated with the DRAMVU project would, in some instances, improve security.

Alternatives 2, 3, and 4 – Action Alternatives

Alternatives 2, 3, and 4, in combination with reasonably foreseeable projects, are not expected to measurably affect populations of the gray wolf and, therefore, would not affect viability of wolf populations. With the obliteration of existing roads, habitat for wolves, as well as their prey base, would be improved. Human/wolf interactions may still occur if wolves are in the vicinity of the project area. This is due to possible wolf/livestock conflicts and human/wolf interactions during hunting seasons and various recreational activities. The restoration of more stable vegetation patterns and natural fire processes would help restore declining forage availability, productivity, and nutritional quality of vegetation that is

important to large ungulate prey species. Maintenance of ungulate habitat, as well as ungulate populations, and minimizing risks of human-induced wolf mortality will help perpetuate wolf populations throughout much of Idaho, including the Nez Perce National Forest. Management practices as part of this proposal are designed to improve habitat, especially for wolf prey species. It would be unlikely that individual wolves would be impacted by project activities, and effects on wolf populations are expected to be small to negligible at the project and Forest levels.

Conclusion

All alternatives would comply with applicable Forest Plan standards. It is concluded that Alternative 1 would have "*No Impact*" on wolves.

Wolves have an extremely high fecundity rate, are highly mobile, and have sustained some habitat connectivity with large populations in Canada. While other factors outside of the Forest Service's control (poaching, illegal poisoning, ungulate availability, etc.) may have negative effects on wolves, the actions taken on the Nez Perce National Forest are consistent with maintaining habitat for wolves at all scales. Based on all of the information presented above, there appears to be little risk of loss of population viability on the Nez Perce National Forest. **Alternatives 2, 3, and 4 "*May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the populations or species.*"**

Townsends' Big-eared Bat, Long-eared Myotis, Long-legged Myotis, Fringed Myotis

Townsend's big-eared bats occur in a wide variety of habitat types and forage in many areas, including grasslands, shrublands, vegetated stream corridors, forests, and along roadways that provide easy flight "tunnels" through forested habitat. They use snags, caves, buildings and rock crevasses for daily roosting and for maternity roosts, and are very susceptible to disturbance at those sites. Open water is also important habitat for bats.

Townsend's big-eared bat has a global rank of G4 (not rare, apparently secure) and an Idaho State ranking of S3 (rare or uncommom but not imperiled) (NatureServe [accessed February 26, 2019]; Idaho Fish and Wildlife Information System [accessed February 26, 2019]).

The long-eared myotis lives in coniferous forests in mountain areas and roosts in small colonies in caves, mines, cliff face crevices, rock outcrops, buildings, bridges, and under tree bark. The long-legged myotis lives in forested mountainous areas, sometimes desert lowlands. It roosts in tree hollows and under bark, in rock crevices, caves, mines, bridges, and buildings. Both species are ranked as G5 (secure)/S3 (rare or uncommon but not imperiled) (NatureServe, Accessed February 11, 2019; Idaho Fish and Wildlife Information System, Accessed February 11, 2019).

In Idaho, the fringed myotis is associated with grasslands, xeric shrublands, ponderosa pine, Douglas-fir, and mixed xeric forests (IDFG 2005). Maternity colonies, day roosts, and night roosts for the fringed myotis are found in caves, buildings, underground mines, rock crevices, tree hollows and bridges. Roost trees tend to be large diameter snags in early to medium stages of decay. Fringed myotis prey on beetles, harvestmen, crickets, spiders, moths, and crane flies.

The fringed myotis has a global rank of G4 (apparently secure) and an Idaho State ranking of S3 (rare or uncommon but not imperiled) (NatureServe, [accessed February 26, 2019]; Idaho Fish and Wildlife Information System, [accessed February 26, 2019]).

In 2005, the Northern Region recognized the need for additional documentation of bats on National Forest System lands. Surveys were conducted across the Region on selected Ranger Districts in 2005 through 2007. Surveys were conducted on the Nez Perce National Forest during this time period and found that 9 different species of bats occur on the Forest. Within the project area, long-eared myotis and long-legged myotis were documented.

Affected Environment

The project area provides foraging habitat and large diameter snags for roosting. There are no caves, mines, rock crevasses or buildings suitable for roosting sites within treatment units. Several old buildings

within the project area do not provide suitable roosting habitat. There are no known winter roosting, summer roosting, or summer maternity sites identified within the project area. Large diameter snags that are hollow may provide roost sites.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments would occur with this alternative and current vegetative processes would continue. Therefore, there would be no direct or indirect effects to bats or their habitat.

The no action alternative would maintain snag densities at present levels and may even increase as additional trees die. As these trees die, roosting habitat for bats would increase.

Foraging habitat suitability has probably been indirectly affected by fire exclusion, which has encouraged an overstocked understory of Douglas-fir to develop. The lack of fire may have reduced the availability of insect prey because of cooler, more shaded conditions that discourage aerial insect production.

As snags fall over time, snag habitat would decline. Snag-fall rates vary for different tree species and size classes. Only the largest would likely remain standing over the long-term. Suitable roosting substrate may also be lost to firewood gathering activities, especially along roads.

Alternatives 2, 3, and 4 – Action Alternatives

Roosting sites in mines, caves, and buildings would not be affected by the action alternatives.

Intermediate harvest in the action alternative would reduce the number of snags and live trees that could become snags over time, decreasing roosting opportunities. Timber harvest also has the potential to injure or kill any bats that are roosting in snags and hollow trees that are felled during treatment activities. Underburning could eliminate some snags, but create others and would have no net effect on availability of roosting sites. However, newly created snags from burning activities would not have the sloughing bark or cavities that is necessary for snag roosting bats. Intermediate harvest treatments would also promote the retention of fire resistant tree species. The resulting stands would be widely spaced and contain larger diameter trees with light understory fuels which would allow for low intensity fires that reduce the ingrowth of less fire resistant species and reduce the crowding of fire resistant species. The treatments would benefit bats by opening up the overstory and understory, allowing for better foraging conditions, enhancing the understory vegetation, and potentially increasing insect production.

Openings larger than 5 acres, especially openings created by regeneration harvest, would probably not be used for foraging by these species because they prefer to forage under the canopy of trees or in small openings. Losses in roosting sites would occur with these alternatives. Regeneration harvest methods would create new openings or enlarge existing openings on the landscape, potentially providing new edges for foraging bats. Regeneration units would have few green trees and few or no snags after treatment, making these areas unsuitable as habitat for bats.

Western larch and ponderosa pine trees would be retained under the action alternatives, which would provide structural diversity and future snags (roosting sites). These trees represent the best available roosting habitats for the long-eared and long-legged myotis (Lacki et al. 2012). In addition, PACFISH buffers would be retained and would provide habitat over the long term. The more acres that are treated to improve growing conditions for large diameter, early-seral tree species would provide more roosting resources for bats. Improving growing conditions for grasses and shrubs would also improve forage for insectivorous prey species. Some of the negative aspects are the loss of snags with cavities and improving the health of the forest, which might yield an initial short-term reduction in the prey base for bats.

Landscape burning activities could directly produce scattered dead trees, but most would likely be of smaller diameter and of limited value to bats to be used at roost sites. The use of prescribed fire for natural fuels reduction would modestly improve forage conditions for bats. It would have a positive effect of setting back succession and favoring early-seral tree species, particularly ponderosa pine, which provide roosting areas. Many of the grand fir and Douglas-fir seedlings/saplings may be killed, opening up the understory for sunlight, new shrub growth, and encouraging warmth for prey species. Reducing the

ladder fuels would help in reducing the risk of stand-replacing fires. Growth of individual trees may occur in dry site conifers, improving habitat conditions for the bats. Spring burns may not kill enough of the undergrowth, therefore not improving habitat conditions to any great degree. These low elevation communities are adapted to burning in the late summer/early fall and may be better suited in obtaining the desired results of rejuvenating prey species habitat, reducing the shade tolerant species undergrowth, and producing long-term results which result in fewer losses of large ponderosa pine to wildfire.

Proposed road and trail reconstruction/improvements, hand thinning, meadow restoration, watershed improvements (plantings, culverts), and road decommissioning activities would not have an appreciable effect on bats or their habitat.

Cumulative Effects

Geographic Boundary

Based on the ecology of Townsends' big-eared bat, long-eared myotis, long-legged myotis,and fringed myotis, the cumulative effects analysis area is the Hungry Ridge project area. The time frame for cumulative effects is 100+ years because it takes this long to develop habitats with an adequate large diameter dead wood component.

Past, Present, and Foreseeable Future Actions

Activities considered include those that would decrease woody debris levels, both live and dead. This includes timber harvests of all types. Past activities, including the Hungry Mill project, have contributed to current habitat conditions. Specifically, timber harvest decreased the availability of mature forest that provided the highest quality habitats for these species.

The past and ongoing activities listed in the EIS and have contributed to the current habitats conditions. Past timber harvest, road construction and maintenance, fires, fire suppression, grazing, and mining activity have likely affected Townsend's big-eared bat, long-eared, long-legged, and fringed myotis habitat in the project area as well as across the Nez Perce National Forest.

Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments. The most serious factor leading to population declines in bats is loss and/or disturbance of suitable roosting habitat. Fire suppression may have promoted a denser, mixed species stands, which may have increased the amount of suitable roosting habitats. The continued suppression of wildfires allows succession to continue which reduces the quality of foraging habitat by minimizing edges and eliminating small openings. Past timber harvest targeted medium to large trees and left few residual snags and large legacy trees; this may have affected individual bats or local populations.

Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements. Access restrictions associated with the reduction of cross country travel associated with the DRAMVU project would help in alleviating the loss of snags and logs taken by firewood gatherers.

Alternatives 2, 3 and 4 – Action Alternatives

Timber harvest in Alternatives 2, 3, and 4 may contribute to additional losses of suitable habitats that was caused by past timber harvest. However, effects to Townsend's big-eared bat, long-eared, long-legged, or fringed myotis populations at the local or regional scale, or alteration of current population trend, are not expected to be measurable from the cumulative effects of Alternative 2, 3, and 4, based on the amount of suitable habitats remaining inside the project area outside of the harvest units and across the forest.

Overall, proposed management activities would create more suitable foraging habitat in coniferous forests within the project area through the use of burning and harvest activities. Prescribed natural fire on a continual basis (Alternatives 2 and 3) would also help to maintain the mosaic patterns of dense thickets and openings that this species prefers.

None of the existing structures (mines, buildings) would be disturbed by this or other projects proposed in the project area. Project activities should have minimal effects on bat populations at the project or Forest level.

Conclusion

All alternatives would comply with applicable Forest Plan standards in retaining large diameter snags.

It is concluded that Alternative 1 would have "*No Imp*act" on Townsend's big-eared bat, long-eared, long-legged, or fringed myotis because there would be no direct or indirect effects. The current population trends would not be affected.

Timber harvest in Alternatives 2, 3, and 4 may contribute further to the loss of suitable habitat that was caused by past timber harvest. No measurable effects to Townsend's big-eared bat, long-eared, long-legged, or fringed myotis populations at the local or regional scale, or alteration of current population trend, are expected from the cumulative effects of Alternatives 2, 3, and 4, based on the amount of suitable habitats remaining inside the project area outside of the harvest units and forestwide.
Alternatives 2, 3, and 4 "*May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the populations or species."*

Ring-necked Snake

The species selects moist habitats consisting of woodlands, coniferous forests with brushy understories, open grasslands, rocky hillsides, and early-seral riparian areas. Ring-necked snakes prey on earthworms, slugs, other small invertebrates, as well as small salamanders, frogs, lizards, and snakes (Clossel and Peterson 1997, Stebbins 1966). In arid parts of the west, it is restricted to mountainous and riparian areas (Stebbins 1966). The species is usually found on the ground under bark, beneath and inside rotting logs, and under stones and boards. Ring-necked snakes can be found in forested, brushy areas or open hillsides that have rocks or other debris for them to hide in and they may use microhabitats that are moist.

Rangewide status of the ring-necked snake is apparently secure (G5) and statewide status indicates it is rare or uncommon, but not imperiled (S3) (NatureServe, [accessed February 26, 2019]; S1-critically imperiled-Idaho Fish and Wildlife Information System, [accessed February 26, 2019]).

Affected Environment

Forest/shrub communities within the project area could accommodate ring-necked snakes. Most shrubs in these low elevation forest and non-forest habitat types are at least partially dependent on frequent, low to moderate severity fire disturbances, which limit the dominance of conifers over other vegetation. Without such disturbance, conifer regeneration can out-compete and eventually suppress or substantially reduce shrub presence and nutritional quality.

Direct and Indirect Effects

Alternative 1 – No Action

Habitats would continue to be altered by natural events under Alternative 1. No vegetation management actions would take place at this time, but fire suppression would continue. Large down wood habitat components would remain available as trees fall from natural causes. This alternative would have no immediate effects on ring-necked snake or their habitat.

Alternatives 2, 3, and 4 – Action Alternatives

Timber harvest and fire can reduce ring-necked snake habitat by removing or consuming large, down wood. Timber harvest can also be beneficial by creating more open understories to support prey species and allowing more sunlight and heat to reach the forest floor. The greatest effect to ring-necked snakes is the reduction of habitat or the inadvertent squashing of individuals that might occupy the site. Other effects include habitat loss and changes in the prey base arising from habitat change and species introductions (Idaho Dept. of Fish and Game 2005). The planned actions, however, would retain large, standing (recruitment) and down wood in all treatment areas. The continued availability of large wood via

retention and increased growth rates in all treatment units would retain suitable habitats to support ring-necked snake reproduction, foraging, and seclusion.

Natural fuels treatments through the use of prescribed fire would have a positive effect in setting back succession and favoring early-seral habitats. Prescribed underburns would reduce some of the shade tolerant tree species and provide openings. It would also reduce the encroachment of conifers in currently existing natural openings, grassland and shrub fields. Prescribed fire would reduce competition for nutrients and result in greater production of understory species as light and moisture become more available. Fall burns are preferred over spring burns because they consume more dead material and resemble a more natural disturbance pattern, which would create more vegetative diversity and have less of an effect on plant species during the active growing season. None of the beneficial effects from prescribed fire would be achieved with Alternative 4 because prescribed fire activities are not part of this alternative and therefore would not improve habitat as much as the other two action alternatives.

Proposed road and trail reconstruction/improvements, hand thinning, meadow restoration, watershed improvements (plantings, culverts), and road decommissioning activities would not have an appreciable effect on ring-necked snakes or their habitat.

The project would not have a measurable impact on the population as a whole. Available habitat would continue to be available and well distributed throughout the project area. None of the beneficial effects from natural fuels treatments through the use of prescribed fire would be achieved with Alternative 4 as prescribed fire activities are not part of this alternative and therefore would not improve habitat as much as the other two action alternatives.

Cumulative Effects

Geographic Boundary

The geographic area for assessing cumulative effects for ring-necked snakes is the Hungry Ridge project area. The timeframe for the cumulative effects assessment is 20 years. This is because it is the typical length of time for dense shrub and young conifer to re-establish following stand replacing disturbance.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities listed in the EIS and contribute to the current habitats conditions.

Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments.

Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements. Access restrictions associated with the reduction of cross country travel associated with the DRAMVU project would help in alleviating the loss of snags and logs taken by firewood gatherers.

Timber harvest, grazing, insect epidemics, wildfires, fire suppression, mining, and road construction and maintenance can cumulatively affect ring-necked snake through changes in vegetative cover and prey species and prey abundance. Livestock grazing is likely to continue on USDA Forest Service allotments and on private lands, and may have had past negative effects.

Alternatives 2, 3, and 4 – Action Alternatives

For ring-necked snakes, regeneration harvest with underburning removes overstory trees and ground cover, resulting in warmer and drier exposed soils. Short term, these activities could increase the risk of ring-necked snake injury and mortality. There may be the long-term losses of suitable habitats in areas treated by regeneration harvest.

No measurable effects to ring-necked populations at the local or regional scale, or alteration of current population trend, are expected from the cumulative effects of Alternatives 2, 3, or 4..

Conclusion

It is concluded that Alternative 1 would have "*No Impact*" on ring-necked snake, while **Alternatives 2, 3, and 4 "*May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the populations or species.*"**

Bald Eagle

The bald eagle is a Nez Perce Forest sensitive species. Bald eagles are known to use large rivers on the Nez Perce Forest as winter habitat: Salmon River, Selway River, and South Fork Clearwater River. Bald eagle use of the Hungry Ridge project area is generally limited to lower elevation sites generally within ¼ mile of the South Fork Clearwater River during winter seasons. Bald eagles do use the South Fork Clearwater River during the winter, but they are not known to nest along the South Fork Clearwater River.

Carrion from large ungulates is the primary food source for local eagles, and they use large, open-branched ponderosa pine as perch and roost trees, which allow good visibility of large ungulate carcasses. The majority of the perch/roost sites are directly adjacent to the South Fork Clearwater River. There is no known bald eagle nesting occurring in the South Fork Clearwater River subbasin or the Nez Perce National Forest.

Rangewide status of the bald eagle is apparently secure (G5) and statewide status indicates it is widespread, abundant, and secure (S5) (NatureServe, [accessed February 26, 2019]; Idaho Fish and Wildlife Information System, [accessed February 26, 2019]).

Affected Environment

Depending on snow and ice conditions during the winter, bald eagles can be seen along the South Fork as high up as the mouth of Newsome Creek. Bald eagle use of the project area is generally limited to lower elevation sites generally within ¼ mile of the South Fork Clearwater River during winter seasons.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments would occur with this alternative and current vegetative processes would continue. The no action alternative would continue to allow incremental replacement of ponderosa pine by Douglas-fir and other, more shade-tolerant tree species.

Alternatives 2, 3, and 4 – Action Alternatives

Activities associated with the Hungry Ridge project would not occur during the winter (November through March) at times when bald eagles are not known to occur along the South Fork. It is assumed that all activities within ¼ mile of the South Fork Clearwater River would occur between April and the beginning of November.

Any prescribed burning or harvest activities that occur along the river in the spring, usually April or later, would occur at times when eagles are not present. Therefore, there should be no direct effects to bald eagles from this project. Harvest and prescribed burning activities would improve forage conditions for big game and result in a net benefit to bald eagles. Harvest and burnings activities are not expected to impact roost sites along the South Fork Clearwater River. If roosting occurs elsewhere than along the river, it is most likely in sheltered draws and side canyons. Such habitats are not expected to be affected by proposed timber harvest, due to unit placement and implementation of PACFISH buffers. Other draws and side canyons can be found all along the South Fork Clearwater River.

No road improvements, temporary road construction, or road obliteration would occur within ¼ mile of the South Fork Clearwater River and therefore, there would be no impacts from these activities to the bald eagle.

Direct effects to bald eagles may occur as a result of disturbance from logging and prescribed burning operations. If harvest takes place during the winter months, birds may be temporarily displaced from the area due to noise and/or human presence in the area. The impact of other logging disturbance (falling trees, vehicle traffic, noise) is judged to be less important biologically, based on observed eagle behavior,

habitat use within the project area, the type of disturbance involved, and the availability of roost/perch sites and foraging habitat elsewhere along the South Fork Clearwater River. All of the logging operations are more than ¼ mile above the river (over 1/3 mile or more).

Prescribed underburns to reduce natural fuel levels would reduce some of the shade tolerant tree species and provide openings, thus improving habitat for prey species. Burns would also reduce the encroachment of conifers in currently existing natural openings, grasslands, and shrub fields. Prescribed fire would reduce competition for nutrients and result in greater production of understory species as light and moisture become available. The season of burn can influence ground vegetation and the amount of understory vegetation consumed.

Proposed road and trail reconstruction/improvements, hand thinning, meadow restoration, watershed improvements (plantings, culverts), and road decommissioning activities would not have an appreciable effect on bald eagles or their habitat.

Cumulative Effects

Geographic Boundary

The geographic boundary for assessing cumulative effects to bald eagles and their habitat is the project area. The timeframe for cumulative effects is up to 20 years, which is about the time it takes for new plantations to restore forage in the harvest and prescribed burn areas.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities listed in the EIS contribute to current habitats conditions. Past timber harvest, mining, livestock grazing, and road construction may have contributed to changes in bald eagle habitats. More recently, PACFISH buffer implementation has minimized the effects of activities on eagles and their habitats.

Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments. Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements.

Past timber harvest, fire, and fire suppression have altered habitat characteristics in the project area by reducing the amount and distribution of large and medium trees, snags, and down wood, and by creating numerous, small patches across the landscape. These changes have affected bald eagle ungulate prey species. Prior to fire suppression and timber management, elk and deer populations were dependent upon natural disturbances to create openings that provided the early successional growth they favor for foraging.

Alternatives 2, 3, and 4 – Action Alternatives

Proposed management activities would not cumulatively influence prey availability. Effects to bald eagle prey and their habitat would not significantly change from current condition. Alternatives 2, 3 and 4, in combination with reasonably foreseeable projects, are not expected to measurably affect populations of the bald eagle as activities are expected to be conducted at times when the bald eagle are not present in the project area and surrounding area.

Conclusion

The project proposal is consistent with the bald eagle management strategies in that activities would help maintain and improve ungulate and fish habitats. It would be unlikely that individual eagles would be impacted by project activities, and effects on bald eagle populations are expected to be small to negligible at the project and Forest levels.

All alternatives would comply with applicable Forest Plan standards pertaining to riparian habitats. The PACFISH buffers that would protect the highest quality bald eagle habitat have been incorporated by amendment into the Forest Plan. All alternatives would implement these buffers as required by the

Forest Plan. Alternative 1 would have "*no impact*" on the bald eagle, while **Alternatives 2, 3, and 4 "*May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the populations or species.*"**

Fisher

The fisher is a management indicator and sensitive species on the Nez Perce National Forest. Fisher occurrence in western North America is closely associated with low- to mid-elevation forests with a coniferous component, large snags or decadent live trees and logs for denning and resting, and complex physical structure near the forest floor to support adequate prey populations (Aubry and Lewis 2003). Fishers are closely associated with forested riparian areas which are used for foraging, resting, and traveling.

Mature and old-growth forests are used by fisher during summer, and young and oldgrowth forests are used during winter (Jones 1991). Forested riparian habitat is also important, and stream courses may used as travel corridors (Jones 1991).

Fishers are generally associated with mature coniferous forests with large trees and coarse woody debris (Samson 2006). In Idaho, fisher prefer old growth and mature forests in the summer, old and young forests in the winter, and riparian areas in general (ibid). Old and large trees can provide denning and resting sites, as can accumulations of woody debris (USFWS 2011). Canopy cover of at least 40 percent appears important (USFWS 2011, Lofroth et al. 2010, Lofroth et al. 2011). In Idaho, fishers inhabit mountain ranges and riparian areas up to about 6,500 feet (Jones 1991). Home ranges for males in central Idaho average 98.4 km2 (24,315 acres) and female home ranges average about 49.3 km2 (12,182 acres) (Sauder 2014).

According to Sauder (2014), fisher select landscapes with highly connected patches of mature forest (greater than or equal to 50%) and small amounts of open areas (less than or equal to 5%). Fishers appear able to use "many different habitats for hunting as long as these areas provide overhead cover at either the stand or patch scales" (Weir and Harestead 2003). Sufficient overhead cover in foraging habitat may be provided by either tree or shrub cover. Although fisher home ranges are consistently characterized by moderate to high proportions of mid- and late seral forests, there are few overarching patterns of selection for particular seral conditions or species compositions (Sauder and Rachlow 2014). Raley et al. (2012) hypothesized, and Sauder and Rachlow (2014) support, that when fishers select home ranges, they benefit from including a diverse array of available forest conditions by increasing access to a greater diversity and abundance of prey species while still attaining habitat features important for reproduction and thermoregulation.

Some researchers found that fishers did not select dry forest types with large representation of ponderosa or lodgepole pines (Schwartz et al. 2013, Olsen et al. 2014). Many authors mention that fisher avoid open areas (Buskirk and Powell 1994, Weir and Corbould 2010, Schwartz et al. 2013, Sauder 2014, and Sauder and Rachlow 2014). Examples of such open areas include, grassy openings, meadows, and recently logged areas within the past 12 years.

Fisher has a global rank of G5 (widespread, abundant, and secure) and an Idaho State ranking of S2 (imperiled) (NatureServe 2019 [accessed January 7, 2019]; Idaho Fish and Wildlife Information System [accessed January 7, 2019]). In Idaho, the species occurs in the northern and central parts of the state. Samson (2006b) stated that there is enough habitat within the Northern Region and on the Nez Perce National Forest to maintain viable populations of fisher.

Fisher distribution is thought to be similar to historic levels in the Northern Rocky Mountains (USFWS 2011). Western populations remain at low levels (USFS 2014). In Idaho, fishers are found in the Salmon River Mountains and north (USFWS 2011). Fisher use of the project area, in particular riparian zones, is likely. It is unlikely that they utilize dry forest types found on project area ridges except for low saddles for crossing between areas of more suitable habitat.

There have been extensive surveys for mustelids conducted across the Forest in recent years. DNA hair snare and live trapping across the Forest from 2004 through 2015 resulted in 155 of 1,365 genetic samples testing positive for marten. There have been hair snare surveys for mustelids conducted within the project area as part of these larger Forest-wide efforts. Fourteen hair snare sample locations fell

within or adjacent to the project area in 2007 and 2013. One of the samples collected adjacent to the project area tested positive for fisher. Six incidental observations of fisher have been recorded within the project area since 1990 and a remote camera took a picture of a fisher within the project area in 2014.

Affected Environment

Fisher are known to occur on the Nez Perce-Clearwater National Forests. Based on wildlife surveys conducted in 2013 and 2014, fisher are known to occur in the project area.

For this analysis, potentially suitable habitat was determined using a model (Sauder 2014) that combines 3 models of fisher habitat including: a climate model (Olson et al. 2014), a landscape-scale model (Sauder and Rachlow 2014), and a home range scale model (Sauder and Rachlow 2015). The Sauder (2014) model is continuous across the landscape and identifies relative probability of fisher occurrence.

The methods for estimating the number of acres of suitable habitat within the project area was determined using a combination of the Sauder (2014) model and existing vegetation data modeled by the Region 1 existing vegetation mapping program (R1-VMap) (Barber et al. 2011). The Sauder model is considered the best available science for a landscape scale analysis of fisher habitat in Region 1 but is better applied at a subwatershed level or larger (6th level Hydrological Unit Code) (J. Sauder, pers. comm.). For this reason, stand-scale vegetation characteristics were selected within the area considered as “probable habitat” by the Sauder (2014) model. The GIS query within probable habitat was based on R1-VMap. Stands classified as having a mature, mesic-mixed conifer forest (determined by the species with the greatest abundance of canopy cover, basal area, or trees per acre) were selected and intersected with “probable habitat” by the Sauder (2014) model. Section criteria for mature forests are those areas greater than 15 inches dbh. Open areas are those areas with less than or equal to 10% canopy cover (Sauder 2014 pg. 29), which includes grass/forb, shrub, sparse vegetation, urban, transitional forest, as well as recent (within 15 years) high intensity fires and regeneration harvest.

The analysis of potentially suitable habitat is not intended to determine absolute acres but to assess the potential habitat impacts of proposed projects.

Using the GIS layer from Sauder’s 2014 model, the Hungry Ridge project area was used for the analysis. In discussions with Sauder (2016, pers. comm.), the analysis for fisher should approximate the size of a female’s home range (~12,000 acres). The project area is larger than a female’s home range and is large enough to analyze the effects to fisher and their habitat. Table 3-3 displays the amount of probable habitat and amount of mature to open areas.

Table 3-3. Existing fisher habitat within the project area

Location (acres - FS Administered Land Only)	Amount of Probable Habitat	Amount of Probable Habitat in Mature Forest	Amount of Probable Habitat in Open Areas	Amount of Probable Habitat in Other Structure
Hungry Ridge Project Area (28,382 acres)	25,329 ac (89%)	19,225 ac (76%)	1241 ac (5%)	4861 ac (19%)

Based on the amount of probable habitat in the project area, approximately 89% of the probable habitat is in a mature forest structure and 5% is considered open. Based on Sauder’s 2014 research, the project area (home range size of female fisher or larger) meets the complex forest pattern that fisher tend to occupy (greater than or equal to 50% mature forest arranged in connected, complex shapes with few isolated patches, and open areas comprising less than or equal to 5% of the landscape) (Sauder pers. Comm. 2016).

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments or watershed improvements would occur with this alternative. No road construction would occur, nor would cover be reduced from harvest activities.

Existing fisher habitat would not be harvested under this alternative. In general, mature, high-canopied habitat would increase and small-tree winter habitat would decrease as forest succession continues to fill in understories and increase stand canopy closure. In predominantly mixed conifer stands, additional trees would die as a result of insect and disease activity, and dead trees would eventually fall to the ground. This process would create suitable habitat and niches for at least some of the small mammal species fisher prey upon. Fishers do not forage in openings; areas with significant fallen trees would only provide habitat along the edges of these newly opened areas. High densities of downed logs, shading from snags, and lack of seed sources may delay the regeneration of new trees relative to harvested areas and extend the length of time it would take for new small tree and mature habitats to develop. In RHCAs, trees killed by insects and other successional processes and not cut for firewood would fall to the ground and into streams, enhancing structural diversity in these areas.

Fuel build-up resulting from fire suppression activities would continue, thereby increasing the likelihood of a stand-replacing fire. Stand-replacing fires could potentially reduce mature and old growth habitat across the project area depending on the size and severity of the disturbance. Similarly, fuel loads along streams and RHCAs would continue to increase and may expose these environments to intense fires. Stands of dead and dying lodgepole pine are particularly vulnerable to stand-replacing fires; small tree lodgepole pine winter habitat would likely be lost in a fire event. A pulse of large logs on the ground due to fire or insect epidemics could provide denning structures and cover for fisher and several prey species, but these areas are likely to be avoided until the living canopy cover again exceeds 40 percent.

Alternative 2, 3, and 4 – Action Alternatives

Historically, fisher habitat fluctuated with mixed and stand replacing fires. Stand-replacing fires, depending on intensities, have maintained a mosaic of size classes and patch sizes across the landscape that could provide habitat.

Treatments that include green and dead tree harvest to improve forest health and reduce the incidence of insects and disease would adversely affect fisher habitat. Regeneration harvest would eliminate denning and foraging habitats from treated areas in both the short-term and long-term because forest cover would be removed. The few remaining trees in each treatment unit would not provide enough canopy cover, nor suitable denning, and/or foraging sites or the structural diversity that is important for fisher and their prey species. This is particularly true for regeneration harvest where the majority of the snags and mature trees would be removed, leaving approximately 6-40 trees per acre depending on harvest type (clearcut, seed tree, or shelterwood). Depending on the size and shape of the openings created by regeneration harvests, fishers may avoid using these areas if they are wider than 300 feet.

It may take over 100 years for suitable conditions to be restored. Slash treatment would also reduce the understory structural components, particularly down logs and snags that could be consumed by fire. Snags and down wood would be provided for over the long term (100 years or later) through tree retention design features. Canopy cover would increase to suitable levels after about 30 years. Harvest activities would leave large, live trees.

Treatments that include underburning and light harvests, such as thinning and small patch openings, are not expected to result in canopy opening changes or create large openings with early-seral vegetation which fishers would avoid using. Intermediate harvest and landscape burning to reduce natural fuels are designed to remove the suppressed trees and leave the dominant and codominant trees. Intermediate harvest is expected to leave approximately 55-75% of the tree canopy and a basal area of 80-120 square feet/acre. It is assumed that intermediate harvest may still retain enough structure and overstory canopy to be used by fisher.

The effects of harvest and burning to fisher would be relative to the amount of habitat modification. Table 3-4 shows the amount of modeled fisher habitat that would be treated by alternative.

Between 6,801 and 7,463 acres (27-29%) of probable fisher habitat within the Hungry Ridge project area will be harvested. Within the project area, between 3945 and 4132 acres of mature forest would be

treated with a regeneration harvest type. This increases the amount of openness in the project from 5% to 21%. Mature forest would decrease from 76% to 60%.

Table 3-4. Acres of fisher habitat available in the project area by alternative and proposed treatment type

Modeled Fisher Habitat	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Total in Project Area	25,329	25,329	25,329	25,329
Treated by Intermediate Harvest	0	1,987 (8%)	1,810 (7%)	1,582 (6%)
Treated by Regeneration Harvest	0	5,381 (21%)	5,473 (22%)	5,219 (21%)
Total Treated	0	7,368 (29%)	7,283 (29%)	6,801 (27%)

According to Sauder (2014) and Sauder and Rachlow (2014), increasing the amount of open areas, even small changes, can have large effects on the probability of fisher occupying an area. Increases of openness from 5% to 10% can reduce the relative probability of occupation of fisher in an area by 39%. Implementation of the Hungry Ridge project would increase the amount of open areas in the project area by 22%, from 5% to 26%. This includes all structural classes that would be treated with a regeneration harvest type. The amount of mature forest structure would decrease from 76% to 60% of the project area. The amount of openness would increase and may deter fisher to use some areas; however, there would still be a large amount of mature forest remaining in the project area.

Removing downed woody material, snags, and canopy cover used by fisher and their prey could reduce suitable habitat in the short-term. Fishers do not forage in openings and would avoid using newly harvested units except along the edges of those units.

Most of the new regeneration harvest units are adjacent to previous harvest units, creating very large areas of early-seral forest conditions (over several hundred acres in size). The older regeneration units are lacking in standing snags and down woody debris. These large early-seral forest conditions are not considered suitable fisher habitat due to the lack of canopy cover and the reduction of large diameter trees and snags used as denning and foraging areas.

The construction of temporary roads for harvest would temporarily eliminate available denning and foraging sites. However, these roads would be decommission and would be revegetated, but it would take decades for full revegetation of the roads.

The temporary increase of human activity in the project area associated with the proposed action could cause disturbance/displacement of fisher due to the noise and influx of human activity in the project area. As mitigation, all current access closures would be maintained as part of the proposed project.

None of the action alternatives would harvest trees in RHCAs. Connectivity along riparian habitat corridors would remain intact under the action alternatives. As with the no action alternative, trees killed by insects and other successional processes and not cut for firewood would fall to the ground and into streams, enhancing structural diversity in these areas.

Alternative 2 would harvest in MA20, while Alternatives 3 and 4 would not. The treatment in MA20 is designed to remove the younger understory vegetation in the drier old growth habitats and reduce the competition and ladder fuels. Even though other mature or over-mature area may be harvested, large-diameter, oversized trees would be retained in harvest units to provide structural diversity. Sufficient habitat would remain unaffected by the proposed actions to continue to support fisher and the species they represent within the watershed and across the forest.

Temporary roads are proposed in both Alternatives 2 and Alternatives 3. In Alternative 2, approximately 14.7 miles of temporary road construction is proposed, of which 9.9 miles would be on existing road templates. There would also be a temporary reduction (approximately 21 acres) in cover and forage with the loss of vegetation associated with constructing 4.8 miles of new temporary roads. This reduction in vegetation would be of a short duration because these sites would be revegetated. There are approximately 25.7 miles of temporary road construction proposed under Alternative 3. Approximately 16.4 miles of temporary road would be constructed on an existing template, while 9.5 miles would be new temporary road construction. All temporary roads would be decommissioned after activities are

completed in an area. There would also be a temporary reduction (approximately 43 acres) in cover and forage with the loss of vegetation associated with constructing 9.5 miles of new temporary roads. This reduction in vegetation would be of a short duration because temporary roads would be decommissioned and revegetated. Minor ridge top areas may be impacted in the short-term, but is not expected to create a barrier to wildlife emigration or immigration.

Under Alternative 2, there are approximately 4.7 miles of new permanent road construction. The construction of new permanent roads would result in a permanent loss in vegetation, approximately 28 acres. The proposed permanent road into Trout Creek (Rd 9413 extension) is along a major ridgeline, which is used as major travel corridor by many wildlife species, especially big game. The construction/addition of the Trout Creek route severs a large wildlife security area, but would be closed to motorized travel.

Alternative 3 does not include any new permanent road construction only temporary roads which would be decommissioned. However, the effects of temporary roads along major ridge and travel corridors would have the same impacts as the other action alternatives. There would be a loss in vegetation with the construction of the road, but this would be temporary as the roads would be decommissioned after use. However, the loss of the overstory vegetation would take decades to grow back and provide enough cover for animals to use them.

Temporary roads constructed for harvest activities would be closed to public motorized use and decommissioned after use and would not add to existing road densities within the project area or watershed.

The obliteration of approximately 25-36 miles of road, depending on the alternative, would not change the amount of security within the elk units or the project area; however, revegetating these disturbed areas would improve fragmented habitat.

There may be minor impacts to habitat from landscape burning activities as individuals or clumps of trees may be torched, therefore opening the canopy and creating a mosaic landscape.

Proposed road and trail reconstruction/improvements, hand thinning, meadow restoration, watershed improvements (plantings, culverts), and road decommissioning activities would not have an appreciable effect on fisher or their habitat.

Cumulative Effects

Geographic Boundary

The cumulative effects analysis area for fisher is the two subwatersheds that encompass the project area: Mill Creek and Lower Johns Creek. This area was selected based on average fisher home range size: 24,000 acres for males and 12,000 acres for females (Sauder 2014). The time frame for cumulative effects is 150 years which is the approximate amount of time required for stands to develop into a mature or older vegetative state and snags to develop into a condition that provides habitat for old growth and snag dependent species.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities are described in detail in the EIS contribute to current habitat conditions. Past insect outbreaks, fires, fire suppression, and timber harvest, including the Hungry Mill project, have left a mosaic of habitats on the landscape, but they are not characteristic of the patterns that occurred historically under a more natural disturbance regime. Most harvest units are simple, uniformly-shaped, small to medium-sized patches (<40 acres), without snags or large fire-resistant trees. Gone in these areas are the important snag, down wood, and residual large tree components that provide the structural diversity and cover preferred by fishers. Past activities may have altered the availability of denning habitat, forested connectivity, and prey habitat for fisher. The loss of medium and large trees from timber harvest has reduced the older forest component that is important to fisher year-round. Across the project area, open roads facilitate access for trappers and firewood cutters, potentially decreasing fisher populations and the downed logs important for fisher and their prey species. Road construction has fragmented and degraded riparian areas that provide important travel corridors for fisher.

Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments.

Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements. Access restrictions associated with the reduction of cross country travel associated with the DRAMVU project and road decommissioning with the Newsome watershed project would help in alleviating the loss of snags and logs taken by firewood gatherers and improve wildlife security.

Ongoing road/trail maintenance, grazing, fire suppression, watershed restoration activities, livestock grazing, weed management and other recreational activities are not expected to affect the fisher.

Alternatives 2, 3, and 4 – Action Alternatives

Implementation of the action alternatives would add to forest fragmentation levels in the project area, which would be cumulative to past, present, and other foreseeable harvest activities in these drainages. It would reduce fuels at relatively moderate levels, potentially contributing to less fire risks to old growth and late seral habitats. Across the project area, open roads to motorized vehicles facilitate access for trappers and firewood cutters, potentially decreasing fisher populations and the downed logs important for fisher and their prey species. Access restrictions associated with the reduction of cross country travel associated with the DRAMVU project would help in alleviating the loss of snags and logs taken by firewood gatherers. There would be a short-term displacement/disturbance with the implementation of activities associated with the Hungry Ridge project and other future projects in the surrounding area.

Table 3-5. Acres of fisher habitat available in the Mill Creek and Lower Johns Creek subwatersheds by alternative and proposed treatment type

Modeled Fisher Habitat	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Total in Subwatersheds	38,856	45,191	45,191	45,191
Treated by Intermediate Harvest	0	1,987 (4%)	1,810 (4%)	1,582 (6%)
Treated by Regeneration Harvest	0	5,381 (12%)	5,473 (12%)	5,219 (21%)
Total Treated	0	7,368 (16%)	7,283 (16%)	6,801 (15%)

Conclusion

Under Alternative 1 there would be no activities or disturbances to alter movements or temporarily displace fisher within the project area; therefore, there would be no direct or indirect effects to fisher or their habitat. There would be "n*o Impact"* to fisher or their habitat under Alternative 1.

Under the action alternatives, the reduction of available habitat (up to 29%) and increase in open areas could adversely affect how fisher move through or use the project area. Fisher habitat would remain available within the project area in untreated, mature forest stands, including riparian areas. Fisher habitat is well distributed across the Northern Region and Nez Perce National Forest. Based on monitoring results and widely scattered incidental sightings, local fisher population trends remain relatively stable on the Forest. At the Forest level and across the range of the species, the effects of past, present, and reasonably foreseeable future actions appear small when considering the amount of habitat remaining available. **Alternatives 2, 3, and 4 "*may impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the populations or species.*"**

Mountain Quail

In Idaho, mountain quail are found in brushy mountainsides, coniferous forests, forest and meadow edges, and dense undergrowth. Mountain quail favor areas associated with tall dense shrubs that are

close to water. In Idaho, mountain quail are currently restricted in their range to areas of west–central Idaho, with remnant population strongholds in the Salmon River drainage around Riggins, Idaho.

Mountain quail have a global rank of G5 (widespread, abundant, and secure) and an Idaho State ranking of S2 (imperiled) (NatureServe, [accessed February 26, 2019]; S2 (Imperiled) Idaho Fish and Wildlife Information System, [accessed February 26, 2019]). In Idaho, the species occurs in the northern and central parts of the state.

No known population trends exist for mountain quail in Idaho, other than the species has experienced a significant decline for the last 70 years (IDFG 2005, USDA Forest Service 2010). No population estimates exist for the Forests. During the mid-20th century, the distribution and abundance of mountain quail east of the Cascade Range in Oregon showed significant declines. During the 1980s, populations in westcentral and southwestern Idaho steadily declined (USFWS 2003). Remaining populations occur in the lower Salmon River and Snake River drainages and the foothill and mountain areas of the Boise River drainage (IDFG 2005). A greater than 95% decline has occurred in occupied habitat in Idaho from 1938 to 1989, with remnant population strongholds occurring in the Riggins area (USFWS 2003, Vogel and Reese 2002).

Affected Environment

There are no recent sightings of mountain quail in the South Fork Clearwater drainage and it is believed that this species has been nearly extirpated from the basin (USDA 1998, pgs 20, 166).

Mountain quail surveys were conducted in 2012 on the north side of the South Fork Clearwater River. No mountain quail responses were reported. Targeted surveys were also completed within and near the project area in 2016 and 2017; no detections were recorded (IBO 2016, IBO 2017).

Forest/shrub communities within the project area could accommodate mountain quail. Most shrubs in these low elevation forest and non-forest habitat types are at least partially dependent on frequent, low to moderate severity fire disturbances, which limit the dominance of conifers over other vegetation. Without such disturbance, conifer regeneration can out-compete and eventually suppress or substantially reduce shrub presence and nutritional quality.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments would occur with this alternative. Current vegetative processes would continue unless wildfires occur.

In the past, early successional stages were continually being disturbed, either by fire, livestock trails, or grazing. They tended to breakup the homogeneity/continuity of a patch. With fire suppression and a change in grazing strategies or type of grazing animals, that continual disturbance has been lost (Heekin 1999). Openings have progressively closed with lack of disturbance and the distinct edge interfaces have been lost. In the years that mountain quail were studied on the Salmon and Little Salmon Rivers, most nested along edges, trails, roads, or recent shelterwood or seed tree harvest units where the vegetation had been disturbed and succession has been set back.

As a result of fire suppression, succession would continue. Conifer/shrubs cover types or mountain shrub cover types would continue to decline in extent and juxtaposition. Early-seral patch sizes would continue to decrease as ingrowth continues filling in and maturing in old openings. This would decrease the nutritional value and availability of foraging habitat.

Increased tree densities, high fuel loads from dead and dying trees, and ladder fuels in ponderosa and Douglas-fir stands increase the chance of stand-replacing fires which could result in a loss of the habitat for mountain quail in the short-term.

Alternatives 2 and 3 – Action Alternatives

Mountain quail could be minimally impacted by harvest activities. The removal of dead and dying trees would not impact this species. The burning of slash may temporarily set back the post-fire shrub growth

and subsequent nesting habitat for mountain quail, but over the long-term, would improve habitat conditions for mountain quail.

Natural fuels treatments through the use of prescribed fire would have a positive effect in setting back succession and favoring seral habitats. Prescribed burning activities would reduce some of the shade tolerant tree species and provide openings. It would also reduce the encroachment of conifers in currently existing natural openings, grassland and shrub fields. Prescribed fire would reduce competition for nutrients and result in greater production of understory species as light and moisture become more available.

Burning can also have a positive effect on potential habitat by increasing habitat patchiness, providing a diversity of vegetation, and increasing the nutritional content and digestibility of plants (Lyon et al. 2000. p 51). However, the temporary increases in nutritional qualities of forage plants after fire are short-lived, generally limited to one to three growing seasons. Spring burning may impact individual nesting birds and hatchlings with injury or mortality. Burning operations may also disturb individuals and potentially cause nest abandonment. Fall burns are preferred over spring burns because they occur outside the breeding/nesting season, consume more dead material, and resemble a more natural disturbance pattern, which would create more vegetative diversity and have less of an effect on plant species during the active growing season. Project design measures are included to avoid spring burning where fall burning can be completely safely. None of the beneficial effects from prescribed fire would be achieved with Alternative 4 as prescribed fire activities are not part of this alternative and therefore would not improve habitat as much as the other two action alternatives.

Alternatives 2, 3, and 4 would treat what is thought to be potential mountain quail habitat with intermediate harvest practices. The change in the amount of habitat available for mountain quail between the various harvest alternatives is based solely on the changes in overstory tree species composition and size classes. The important component of mountain quail habitat is the shrubby understories. The real difference between the alternatives is how they improve conditions in the understories, which primarily consist of shrubs and/or conifer saplings. With both harvest and fire, young conifers and the decadent and dead material in the shrubs would be reduced, more so than under Alternative 4. This would allow for better resprouting and new growth of understory grasses, forbs, and shrubs and open the understories to improve maneuverability for this species and improve nutritional content of forage species.

Intermediate harvest practices would open up the overstory canopy and with the combination of fire would allow for the resprouting of decadent shrubs, which may improve nesting habitat by providing better cover. Foraging habitat would also be improved.

Proposed road and trail reconstruction/improvements, hand thinning, watershed improvements (plantings, culverts), and road decommissioning activities would not have an appreciable effect on mountain quail or their habitat.

Proposed management activities may disturb mountain quail if these projects occur during the breeding season (April through June). Mountain quail may be temporarily displaced from the area, if they are present, due to equipment noise, changes in habitat, and/or human presence in the area.

Cumulative Effects

Geographic Boundary

Based on the ecology of mountain quail, the cumulative effects analysis area is the Hungry Ridge project area. The timeframe for the cumulative effects assessment is 20 years because that is the typical length of time for dense shrub and young conifer to re-establish following stand replacing disturbance.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities are described in detail in the EIS and contribute to current habitat conditions.

Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed

treatments. Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements.

Past timber harvest, road construction and maintenance, fires, fire suppression, grazing, and the presence of noxious weeds have likely affected mountain quail habitat in the project area as well as across the Nez Perce National Forest. The continued suppression of wildfires would allow succession to continue, thereby further reducing the quality of foraging habitat.

Future foreseeable projects are not expected to impact the mountain quail.

Alternatives 2 and 3 – Action Alternatives

Overall, proposed management activities (fire and timber harvest) would create more suitable conditions in coniferous forests for mountain quail by reducing the homogeneity of a patch and density of shrub thickets.

Management practices are considered to be consistent with strategies identified as part of South Fork Clearwater Landscape Assessment (1998) and the mountain quail conservation strategy (Vogel and Reese 1995) in terms of using thinning and/or fire to restore lower montane forests. Improving these forest conditions will also help maintain local populations of mountain quail both within the project area and across the District/Forest.

None of the alternatives, in combination with reasonably foreseeable projects, are expected to measurably affect populations of the mountain quail and, therefore, would not affect viability of mountain quail populations. Connectivity along riparian habitat corridors would remain intact for all action alternatives inside RHCAs. However, fuel loads along streams and RHCAs would continue to increase and may expose these environments to intense fires. At the Forest level, impacts of this project proposal and other projects in and around the project area appear small. Therefore, none of the proposed alternatives should affect population viability at the local or Forest level.

Conclusion

It is concluded that Alternative 1 would have "*No Impact*" on mountain quail, while **Alternatives 2, 3, and 4 "*May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the populations or species*" and may even have a "*Beneficial Impact.*"**

White-headed Woodpecker & Pygmy Nuthatch

The *white-headed woodpecker* uses open-grown stands of large mature and older ponderosa pine and, less frequently, mixed Ponderosa pine and Douglas-fir. Casey et al. (2007, 2011 and 2012) identified the following attributes to describe optimal ponderosa pine breeding habitat for white-headed woodpecker: late-successional forest in patches greater than 100 ha (250 ac) with moderately open canopy cover (20%–60%); less than 40% shrub cover; and greater than 4 snags/ha (1.6 snags/acre) greater than 46 cm (18 inches) dbh with greater than 2.5 snags/ha (1 snag/acre) greater than 71 cm (28 in) dbh.

Surveys have been conducted in high-quality habitat west of Peasley Creek with no white-headed woodpecker being found. Incidental sightings were documented in 1980 (Mill Creek) and 1995 (Johns Creek). Surveys were also conducted within the project area and along the South Fork of the Clearwater River in 2016, 2017, and 2018. Detections were recorded along the South Fork only during 2017 efforts (IBO 2016, IBO 2017, IBO 2018).

The *pygmy nuthatch* shows a strong and almost exclusive preference for ponderosa pine habitat, especially older (mid to late seral) stands that are fairly open (greater than 70% canopy coverage). Secondary habitats include interior Douglas fir and aspen (Hutto 1989, IDFG 2001, Johnson and O'Neill 2001, USDA Forest Service 2003c). Pygmy nuthatch reliance on mature and older ponderosa pine forests and numerous snags indicates the specie may be one of the best indicators of health in these forests. Pygmy nuthatch feed on pine seeds and insects extracted from the bark of trees (IDFG 2005, Ritter 2000).

Casey et al. (2011, 2012) identified the following attributes to describe optimal ponderosa pine breeding habitat for pygmy nuthatch: moderately open-to-closed canopy (30%–70% canopy cover) in mature or

old-growth forest with well-developed live canopies for feeding and greater than 3 snags/ha (1.2 snags/ac) greater than 53 cm (21 in) dbh, including at least one large, hollow pine snag per ha (0.40/ac) for roosting.

There is approximately 1260 acres of large diameter (greater than 15" dbh) ponderosa pine and 1000 acres of mixed ponderosa pine habitat within the project area. According to fire history records, none of the low elevation ponderosa pine environments burned in the 1989 and 1919 fires.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments would occur with this alternative and current vegetative processes would continue. Current vegetative processes would continue unless wildfires occur.

Under this alternative, the successional advancement of shade tolerant species, increase in tree densities, and change in species composition and forest structure would continue. Early seral trees such as ponderosa pine would continue to be replaced with grand fir and Douglas-fir. This would even further decrease the amount and distribution of habitat that the white-headed woodpecker and pygmy nuthatch prefers, as well as change the foraging capability of the area. The current ingrowth of shade tolerant species, increased tree densities, and high fuel loads has increased the chances of a stand-replacing wildfire in low elevation ponderosa pine communities. The survival of old, large ponderosa pine is at risk and losses could be substantial. This would further decrease the amount and distribution of habitat for white-headed woodpeckers and pygmy nuthatches.

Alternatives 2, 3, and 4 – Action Alternatives

Harvest activities, prescribed natural fire, and slash disposal would have both beneficial and negative effects. Proposed treatments in late-seral ponderosa pine forest communities would open up stands by reducing tree densities and enhance/restore nesting and foraging habitat. Prescribed fire and harvest treatments that especially thin smaller diameter Douglas-fir and grand fir would help to restore conditions which were perpetuated by the natural frequent fire regimes, and would lessen the risk of a future stand replacement fire by removing the unnatural, stagnant, shade-tolerant understories. The resulting stands would be widely spaced with larger diameter trees and light understory fuels which would allow future low intensity fires that limit ingrowth of less fire resistant species and limit the crowding of fire resistant species.

The treatments described in vegetative response units 3 and 4 would benefit white-headed woodpeckers and pygmy nuthatches by opening up the overstory and allowing for better foraging conditions by encouraging larger diameter ponderosa pine that produce seed. As shown in the table below, all action alternatives treat the same amount of ponderosa pine habitats. The increases in diameter of seral tree species, especially ponderosa pine, and improving growing conditions for this shade intolerant species would increase the forage base, pine seeds, for the white-headed woodpecker.

Table 3-6. Acres and percentage of total available within the project area of large diameter ponderosa pine and mixed ponderosa pine habitat proposed for treatment by alternative and treatment type

Modeled Habitat	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Ponderosa Pine				
Total in Project Area	1260	1260	1260	1260
Treated by Intermediate Harvest	0	231 (18%)	222 (18%)	191 (15%)
Treated by Regeneration Harvest	0	24 (2%)	26 (2%)	24 (2%)
Total Treated	0	255 (20%)	248 (20%)	215 (17%)
Mixed Ponderosa Pine				
Total in Project Area	1000	1000	1000	1000
Treated by Intermediate Harvest	0	219 (22%)	219 (22%)	149 (15%)

Treated by Regeneration Harvest	0	11 (1%)	11 (1%)	11 (1%)
Total Treated	0	231 (23%)	230 (23%)	160 (16%)

Natural fuels treatments through the use of prescribed fire activities would have a positive effect of setting back succession and favoring seral tree species, particularly ponderosa pine, especially under Alternative 2 and 3. Many of the grand fir and Douglas-fir seedlings/saplings may be killed, which would open up the understory, reduce tree densities, and encourage continued growth of mature trees. Reducing the ladder fuels would help in reducing the risk of stand-replacing fires. Subsequent growth of individual mature trees may occur where fire has thinned the stands, thus improving habitat conditions for woodpeckers. Spring burns may not kill enough of the undergrowth, therefore not improving habitat conditions to any great degree. Ponderosa pine has been stressed for many years with the increasing tree densities and lack of fire, and the large trees that white-headed woodpeckers depend on for winter forage (seeds) may not survive spring burns due to crown scorch.

These low elevation communities are adapted to burning in the late summer/early fall. Late summer/fall burns may be better suited in obtaining the desired results of rejuvenating prey species habitat, reducing the shade tolerant species undergrowth, and producing long-term results which result in fewer losses of large ponderosa pine to wildfire.

None of the beneficial effects from prescribed fire would be achieved with Alternative 4 as prescribed fire activities are not part of this alternative and therefore would not improve habitat as much as the other two action alternatives.

The proposed permanent road into Trout Creek (Rd 9413 extension) is along a major ridgeline, which is used as major travel corridor by many wildlife species. The construction/addition of the Trout Creek route severs a large old growth patch, including MA20. This road would impair the integrity of the old growth patch.

Alternative 3 does not include any new permanent road construction only temporary roads which will be decommissioned. However, the effects of temporary roads along major ridge, wildlife travel corridor, and old growth patch would have the same impacts as under alternative 2. There will be a loss in vegetation with the construction of the road, but this would be temporary as the roads would be decommissioned after use. However, the loss of the overstory vegetation would take many decades to grow back and provide enough cover for animals to use the area.

Proposed road and trail reconstruction/improvements, hand thinning, watershed improvements (plantings, culverts), and road decommissioning activities would not have an appreciable effect on white-headed woodpeckers or pygmy nuthatch or their habitat.

Cumulative Effects

Geographic Boundary

Based on the ecology of white-headed woodpeckers and pygmy nuthatches, the cumulative effects analysis area is the Hungry Ridge project area. The time frame for cumulative effects is 150 years which is the approximate amount of time required for stands to develop into a mature or older vegetative state and snags to develop into a condition that provides habitat for these species.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities are described in detail in the EIS have contributed to current habitat conditions. Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments. Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements.

Active fire suppression in former fire-climax ponderosa pine communities and harvest of mature and old growth ponderosa pine, Douglas-fir, and western larch are the two most important cumulative impacts

affecting white-headed woodpeckers and pygmy nuthatches. The absence of fires in the last century has resulted in denser, more closed canopies with more patches of Douglas-fir and grand fir regeneration in the understory than typically occurred. Historically, low elevation south- and west-facing slopes were likely dominated by open-understory, large tree habitat. Fire suppression has contributed to increased understory growth and denser mid-canopy trees that are more prone to stand-placing wildfires.

By removing older, large diameter trees and snags from the landscape, these habitat components have not been allowed to decay to the point where white-headed woodpeckers might use them. Across national forest and private lands, selective cutting and past timber harvest of large-diameter, mature and old growth Douglas-fir, ponderosa pine, and western larch has removed suitable nesting, foraging, and snag habitat components.

Fire suppression, prescribed fire, road/trail maintenance, noxious weed treatment, and recreation activities, would continue under all alternatives.

Foreseeable activities that might have the potential to affect the white-headed woodpecker or pygmy nuthatch within or adjacent to the analysis area include Dramvu, recreation, and firewood gathering. Access restrictions associated with the reduction of cross country travel associated with the DRAMVU project would help in alleviating the loss of snags and logs taken by firewood gatherers.

Alternatives 2, 3, and 4 – Action Alternatives

Active fire suppression in former fire-climax ponderosa pine communities and harvest of mature and old growth ponderosa pine trees are the two most important cumulative impacts affecting white-headed woodpeckers and pygmy nuthatches. Fire suppression would continue under all alternatives even though prescribed natural fire is proposed.

Overall, proposed management activities would create more suitable habitat in coniferous forests within the project area for these species by reducing the density of suppressed and intermediate tree species through the use of prescribed fire and harvest activities to encourage and perpetuate mature ponderosa pine forests. Prescribed natural fire on a continual basis (Alternatives 2 and 3) within and adjacent to the project area would also help to maintain fire-climax, early-seral forests that this species prefers. Management practices are considered to be consistent with strategies identified in the South Fork Landscape Assessment (1998) in terms of using thinning and/or fire to restore lower montane forests. Improving these forest conditions will also help maintain local subpopulations of white-headed woodpeckers and pygmy nuthatches both within the project area and across the District/Forest.

Conclusion

It is concluded that Alternative 1 would have "*No Impact*" on white-headed woodpeckers or pygmy nuthatches because there would be no direct or indirect effects. The current population trends would not be affected.

Timber harvest in Alternatives 2, 3, and 4 is expected to improve habitat conditions for both the white-headed woodpecker and pygmy nuthatch. Habitat alterations are not expected to be measurable from the cumulative effects of Alternatives 2, 3, and 4 based on the amount of suitable habitats in the project area, habitat remaining outside of the harvest units and across the forest. The change in habitat availability within the project area (up to 21 percent) would not affect the ability of white-headed woodpecker or pygmy nuthatches to occupy the project area now or in the future, as the majority of the activities are expect to improve habitat conditions for these species. No measurable effects to white-headed woodpeckers or pygmy nuthatches populations at the local or regional scale. **Alternatives 2, 3, and 4 "*May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the populations or species*" or may even have a "*Beneficial Impact.*"**

Flammulated Owl

The flammulated owl is widely distributed in western North America, breeding from southern British Columbia through the highlands of Guatemala. The flammulated owl is considered a sensitive species within the Northern Region of the Forest Service. They are small, cavity-nesting, predominantly insectivorous owls that are neotropical migrants (Hayward and Verner 1994, Powers et al. 1996). In Idaho, the species has been reported from most of the state's mountain ranges (Groves et al. 1997b p.

119), and is known to occur on the Nez Perce National Forest (Shepherd and Servheen 1992 p. 7). Habitat for flammulated owls occurs on the Forest, primarily along the Salmon, South Fork Clearwater, and Selway Rivers.

Flammulated owl habitat is characterized by open, fire-climax, mature to old growth ponderosa pine or Douglas-fir forest, open canopies (35-65 percent), multiple canopy layers, and low tree density (Reynolds and Linkhart 1992 p. 166, Shepherd and Servheen 1992). Such habitat is likely preferred because it offers both suitable nesting cavities (usually excavated by northern flickers or pileated woodpeckers) and highly available prey. Flammulated owls tend to select sites that are on ridges, upper slopes, or other low-relief areas for nesting. The two habitat features that usually limit flammulated owl populations are the availability of nest cavities (with old pileated woodpecker and northern flicker holes being preferred), and sufficient prey, particularly beetles, grasshoppers, and moths.

Flammulated owls need dense foliage for roosting (Hayward and Verner 1994). Roost sites can be found in multi-layered, mixed-conifer forests with a ponderosa pine component, or flammulated owls may use Douglas-fir or ponderosa pine trees with a sprawling form that provide pockets of dense foliage. Nesting territories are documented between 20-60 acres in size, but flammulated owls have been known to forage as much as 0.5 miles from their nest (USFS 1992).

The flammulated owl has a global rank of G4 (apparently secure) and an Idaho State ranking of S3B (rare or uncommon but not imperiled) (NatureServe [accessed February 26, 2019]; Idaho Fish and Wildlife Information System, [accessed February 26, 2019]). The flammulated owl estimated population level is at the state population target noted in “Partners In Flight Continental Priorities and Objectives for Idaho” (Rosenberg 2004).

No BBS trend data exists for the species (Sauer et al. 2014). Flammulated owls are almost strictly nocturnal, and BBS data are inadequate to establish trends. Saab and Rich (1997) indicate that BBS data are insufficient for this species. Because of the ecology and natural history of this species, it is unlikely that the sample size would increase with more BBS routes.

Affected Environment

Flammulated owl surveys have been conducted lower down in the South Clearwater drainage resulting in mixed results. Flammulated owls were found in Johns Creek (2013) and Granite Creek (just west of Peasley Creek in 1995). Flammulated owl surveys have been conducted in Mill Creek in 2005 and 2008 resulting in no flammulated owls being detected. Flammulated owl surveys were conducted in 2012 with owls being detected in Lower Johns Creek.

Samson (2006a) estimates the Nez Perce National Forest has 39,579 acres of flammulated owl habitat. Samson (2006b) also stated that there is enough habitat within the Northern Region and on the Nez Perce National Forest to maintain viable populations of flammulated owls.

For this analysis, flammulated owl habitat is defined as mixed ponderosa pine and mixed Douglas-fir habitats consisting of large trees (>= 15” dbh) and >= 40% canopy cover (Groves et al. 1997). Approximately 2,258 acres of large diameter mixed ponderosa pine/Douglas-fir habitats occur in the project area.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments would occur with this alternative and current vegetative processes would continue.

Under this alternative, the successional advancement of shade tolerant species, increase in tree densities, and change in species composition and forest structure would continue. Early seral trees such as ponderosa pine would continue to be replaced with grand fir and Douglas-fir. This would decrease even further the amount, distribution, and quality of habitat that flammulated owls prefer, as well as change the foraging conditions within the area. The current ingrowth of shade tolerant species, increased tree densities, and high fuel loads has increased the chances of a stand-replacing fire in low elevation ponderosa pine forests. The survival of old, large ponderosa pine and Douglas-fir are at risk and losses

could lead to substantial further decreases in the suitability of the area to flammulated owls. In the event of a stand-replacing fire, future nest sites, snags, would be lost. However, many new snags would be created, but it will take time for woodpeckers to excavate cavities and provide nest sites for flammulated owls. In addition, widespread stand-replacing fire would severely limit the ability of a site to produce a continual supply of future nest sites for decades.

The suitability of foraging habitat for flammulated owls has probably been indirectly affected by fire exclusion, which has allowed an overstocked, stagnant understory of Douglas-fir and grand fir to develop. The ingrowth of conifers in natural openings has decreased the amount and quality of available habitat for prey species (moths), and subsequently the availability of prey for flammulated owls. The lack of fire may have reduced the availability of insect prey because of cooler, more shaded conditions that discourage aerial insect production. If a stand-replacing wildfire did occur in the area, the availability of prey species would be temporarily reduced. Prey species habitat would be improved, but suitable large, live trees preferred by flammulated owls would be absent for decades.

Alternatives 2, 3, and 4 – Action Alternatives

Harvest activities, prescribed natural fire, and slash disposal would have both beneficial and negative effects. Proposed treatments in lower elevation, dry forest communities would open up stand canopies, and enhance/restore nesting and foraging habitat. Prescribed fire and harvest treatments that especially thin smaller diameter Douglas-fir and grand fir and create openings would restore conditions that were once perpetuated by the natural frequent fire regimes, and would lessen the risk of a future stand replacement fire by removing the unnatural, stagnant, shade-tolerant understories. The resulting stands would be more widely spaced with larger diameter trees and light understory fuels which allow for future low intensity fires that limit ingrowth of less fire resistant species and limit the crowding of fire resistant species.

Intermediate harvest treatments would benefit owls by opening up the overstory and understory, allowing for better foraging conditions and enhancing the understory vegetation and potentially increasing insect production. Alternatives 2, 3, and 4 treat potential habitat for flammulated owls and may reduce the canopy below 35 percent and beyond what might be preferred for nesting (Table 11). These alternatives would provide better foraging areas and potentially increase insect production over a larger area. Alternative 4 would modify the fewest acres of flammulated owl habitat and alternatives 2 and 3 would modify the most. This is based on the amount of habitat being treated and type of proposed treatment.

Table 3-7. Acres of flammulated owl habitat available in the project area and proposed for treatment by alternative and treatment type

Modeled Flammulated Owl Habitat	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Total in Project Area	2258	2258	2258	2258
Treated by Intermediate Harvest	0	478 (21%)	475 (21%)	307 (14%)
Treated by Regeneration Harvest	0	51 (2%)	49 (2%)	51 (2%)
Total Treated	0	529 (23%)	525 (23%)	358 (16%)

Silvicultural prescriptions that retain many or all of the larger, wind-firm trees in ponderosa pine, Douglas-fir, and mixed xeric conifer stands, would maintain these stands as potential flammulated owl habitat. Removing dead, dying, and small green trees from the understory of ponderosa pine and Douglas-fir would open the understory and allow the dominant trees to grow larger. Stands that before treatment had high canopy closure (>65%) would open up and move to moderate canopy closure (40-65%) which flammulated owls prefer for foraging. Broadcast burning these stands would further improve habitat conditions for flammulated owls by killing grand fir and Douglas fir seedlings and opening the understory for new shrub growth which improves habitat for prey species.

Regeneration harvest would eliminate suitable habitats from treated areas in both the short-term and long-term because forest cover would be removed. The few remaining trees in each treatment unit would not provide sufficient structural diversity to support flammulated owls.

Natural fuels treatments through the use of prescribed fire activities would have a positive effect of setting back succession and favoring seral tree species, particularly ponderosa pine. Many of the grand fir and Douglas-fir seedlings/saplings may be killed, which would open up the understory, reduce tree densities, and encourage continued growth of mature trees. Reducing the ladder fuels would help in reducing the risk of stand-replacing fires. Subsequent growth of individual mature trees may occur where fire has thinned the stands, thus improving habitat conditions for flammulated owls. Spring burns may not kill enough of the undergrowth, therefore not improving habitat conditions to any great degree. Ponderosa pine has been stressed for many years with the increasing tree densities and lack of fire, and the large trees that flammulated owls depend on for winter forage (seeds) may not survive spring burns due to crown scorch.

These low elevation communities are adapted to burning in the late summer/early fall. Late summer/fall burns may be better suited in obtaining the desired results of rejuvenating prey species habitat, reducing the shade tolerant species undergrowth, and producing long-term results which result in fewer losses of large ponderosa pine to wildfire.

None of the beneficial effects from prescribed fire would be achieved with Alternative 4 as prescribed fire activities are not part of this alternative and therefore would not improve habitat as much as the other two action alternatives.

The proposed permanent road into Trout Creek (Rd 9413 extension) is along a major ridgeline, which is used as major travel corridor by many wildlife species. The construction/addition of the Trout Creek route severs a large old growth patch, including MA20. This road would impair the integrity of the old growth patch. Building these new roads would fragmentation large patches of flammulated owl habitat and could disrupt movement patterns of flammulated owls.

Alternative 3 does not include any new permanent road construction only temporary roads which will be decommissioned. However, the effects of temporary roads along major ridge, wildlife travel corridor, and old growth patch would have the same impacts as under alternative 2. There will be a loss in vegetation with the construction of the road, but this would be temporary as the roads would be decommissioned after use. However, the loss of the overstory vegetation would take many decades to grow back and provide enough cover for animals to use the area.

Proposed road and trail reconstruction/improvements, hand thinning, watershed improvements (plantings, culverts), and road decommissioning activities would not have an appreciable effect on flammulated owls or their habitat.

Cumulative Effects

Geographic Boundary

Based on the ecology of flammulated owls, the cumulative effects analysis area is the Hungry Ridge project area. The time frame for cumulative effects is 150 years which is the approximate amount of time required for stands to develop into a mature or older vegetative state and snags to develop into a condition that provides habitat for old growth and snag dependent species.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities are described in detail in the EIS have contributed to current habitat conditions. Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments. Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements.

Active fire suppression in former fire-climax ponderosa pine communities and harvest of mature and old growth ponderosa pine, Douglas-fir, and western larch are the two most important cumulative impacts affecting flammulated owls. The effects of these past actions are imbedded in the environmental baseline described above in the habitat diversity section.

The absence of fires in the last century has resulted in denser, more closed canopies with more patches of Douglas-fir and grand fir regeneration in the understory than typically occurred. Historically, low elevation south- and west-facing slopes were likely dominated by open-understory, large tree habitat. Large wildfires in the low elevations of the project area in the early 1900s has created conditions that are not favorable to the flammulated owl as these stand are young and have a lot of undergrowth. Fire suppression efforts may have contributed to increased understory growth and denser mid-canopy trees, making foraging more difficult for flammulated owls. Across national forest and private lands, selective cutting and past timber harvest of large-diameter, mature and old growth Douglas-fir, ponderosa pine, and western larch has removed suitable nesting, foraging, and snag habitat components.

Fire suppression, prescribed fire, road/trail maintenance, noxious weed treatment, and recreation activities, would continue under all alternatives.

Foreseeable activities that might have the potential to affect the flammulated owl within or adjacent to the analysis area include Dramvu, recreation, and firewood gathering. Access restrictions associated with the reduction of cross country travel associated with the DRAMVU project would help in alleviating the loss of snags and logs taken by firewood gatherers.

Alternatives 2, 3, and 4 – Action Alternatives

Overall, proposed management activities would create more suitable habitat in coniferous forests within the project area for this species by reducing the density of suppressed and intermediate tree species through the use of prescribed fire and harvest activities to encourage and perpetuate mature ponderosa pine forests. Prescribed natural fire on a continual basis within and adjacent to the project area would also help to maintain fire-climax, early-seral forests that this species prefers.

Active fire suppression in former fire-climax ponderosa pine communities and harvest of mature and old growth ponderosa pine trees are the two most important cumulative impacts affecting flammulated owls. Fire suppression would continue under all alternatives even though prescribed natural fire is proposed. Overall, proposed management activities would create more suitable habitat in coniferous forests within the project area for flammulated owls by improving the quality of habitat that exists through the use of burning and harvest activities to perpetuate mature ponderosa pine forests. Prescribed natural fire (Alternatives 2 and 3) on a continual basis within and adjacent to the project area would also help to maintain open stands of mature ponderosa pine that this species prefers. Management practices are considered to be consistent with strategies identified in the South Fork Landscape Assessment (1998) in terms of using thinning and/or fire to restore lower montane forests. Improving these forest conditions will also help maintain local subpopulations of flammulated owls both within the project area and across the District/Forest.

Conclusion

It is concluded that Alternative 1 would have "*No Impact*" on flammulated owls because there would be no direct or indirect effects. The current population trends would not be affected.

Timber harvest in Alternatives 2, 3, and 4 is expected to improve habitat conditions for the flammulated owl. Habitat alterations are not expected to be measurable from the cumulative effects of Alternative 2, 3, or 4 based on the amount of suitable habitats in the project area, habitat remaining outside of the harvest units and across the forest. The change in habitat availability within the project area (up to 23 percent) would not affect the ability of flammulated owls to occupy the project area now or in the future, as the majority of the activities are expect to improve habitat conditions for this species. No measurable effects to flammulated owl populations at the local or regional scale. **Alternatives 2, 3 and 4 "*May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the populations or species*" or may even have a "*Beneficial Impact.*"**

Black-backed Woodpecker

The analysis area for black-backed woodpeckers is the project area. Black-backed woodpeckers are somewhat nomadic and would move to large areas with fire-killed dead and/or dying trees or infected with bark and wood-boring beetles. Black-backed woodpeckers are habitat specialists that respond opportunistically to dramatic changes in forest structure and composition, such as fire and insect

outbreaks (Dixon and Saab 2000, Powell 2000). Population spurts associated with large fires and insect epidemics may be necessary for maintaining black-backed woodpecker populations.

Black-backed woodpeckers inhabit montane forests; primarily ponderosa and lodge-pole pine stands (Bull 1980:6-7, 26, 35, 41-42, 54, 59, 62-65). They are frequently seen inhabiting burned areas, harvested areas, or beetle-killed forests. Old growth lodgepole pine, ponderosa pine, Douglas-fir, and mixed conifer forests provide such conditions (Washington Dept. Wildlife 1991 p. 1). Optimal black-backed woodpecker habitat however, is provided by recent (<5 year old) burned-over forest (Washington Dept. Wildlife 1991 p. 1). Nest sites are located in cavities of dead or live trees containing heartrot near water. In Idaho and Oregon, home range sizes for black-backed woodpeckers range from 178-306 acres (Dixon and Saab 2000).

Black-backed woodpeckers feed in concentrations of dead and dying trees, and are often seen feeding in areas where there have been recent fires or insect outbreaks. Black-backed woodpeckers will also forage in stands undergoing bark beetle outbreaks, but density estimates in these stands are substantially lower than in post-fire forests (Powell 2000). Such sites provide the limited habitat conditions required for nesting and feeding. Black-backed woodpecker numbers decline about five years after a fire or beetle outbreak, paralleling the decline in bark beetle larvae.

Bull et al. (1986) and Goggans et al. (1988) studied black-backed woodpeckers in beetle-infected forests. Bull et al. (1986) observed black-backs foraging most often in ponderosa pine and lodgepole pine trees, but western larch and Douglas-fir were also used. Forage trees tended to be small, with mean dbh being 12 inches. Goggans et al. (1988) found black-backed woodpeckers foraged and roosted in mature and overmature stands of lodgepole pine and lodgepole pine-dominated mixed-conifer stands. Forage trees ranged in size from 8-20 inches dbh, with a mean dbh of 14 inches.

The black-backed woodpecker has a global rank of G5 (widespread, abundant and secure) and an Idaho State ranking of S4 (not rare and apparently secure) (NatureServe, [accessed February 26, 2019]; Idaho Fish and Wildlife Information System [accessed February 26, 2019]). Black-backed woodpeckers are not listed as a species of greatest conservation need for the state of Idaho (Idaho Department of Fish and Game 2005-Idaho Comprehensive Wildlife Conservation Strategy). The black-backed woodpecker estimated population level is at the state population target noted in “Partners In Flight Continental Priorities and Objectives for Idaho” (Rosenberg 2004). Samson (2006b) also stated that there is enough habitat within the Northern Region and on the Nez Perce National Forest to maintain viable populations of black-backed woodpeckers.

The National Breeding Bird Survey (BBS) is a national bird occurrence monitoring program coordinated by the US Geological Survey. These routes are used to monitor long-term changes in populations as part of the national Breeding Survey effort (Sauer et al. 2005). Although single survey routes do not have an adequate number of data points to show population trend individually (by route), they do indicate if black-backed woodpeckers were detected or not, and when combined with the other routes, they provide a measure of relative statewide population trend. Nationally, there is a long-term upward trend in the population of black-backed woodpecker of greater than 0.69% per year over a 46-year period (1966-2012). For the state of Idaho, the BBS data shows a long-term upward trend in the population of 2.57% per year since 1966.

Affected Environment

Black-backed woodpeckers are known to occur on the Salmon River District in both fire created and insect infested habitats.

For this project, habitat is defined primarily as ponderosa pine and lodgepole pine forests with diameters greater than 5 inches dbh (Goggans et. al 1989). Approximately 6,374 acres of primary habitat occurs in the project area. Other mature, mixed conifer forests are also considered habitat. There is approximately 20,549 acres of mixed conifer stands greater than 10”dbh. The last, large fires in the project area were in 1089 and 1919, burning roughly three quarters of the project area.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments would occur with this alternative and current vegetative processes would continue.

As forest succession and fire suppression occur in overstocked stands, trees become more susceptible to attack from insects and disease. This increases the amount of foraging and nesting resources available to black-backed woodpeckers. As the insect and disease outbreak advances, standing and down dead material would increase which in turn increases the risk of stand-replacing fires. If a fire event were to occur, wood-boring beetle populations would spike causing a coincident spike in black-backed woodpeckers for one to six years post burn. Without a fire event, the insect outbreak would eventually peak and subside. Grand fir and other more shade tolerant species that currently exist in the understory of stands with dead and dying trees would continue to grow, perhaps eventually causing the long-term loss of the early seral tree species black-backed woodpeckers prefer (e.g., lodgepole pine and ponderosa pine). Under the no action alternative, the existing level of patchiness in the watershed would persist until a stand-replacing fire or other management action(s) take place.

Alternatives 2, 3, and 4 – Action Alternatives

Treatments that include timber harvest practices to improve the health of forests and reduce the incidence of insects and disease would reduce habitat for black-backed woodpeckers, as well as other species. Not only would the habitat they are using be modified, the patchiness of the remaining habitat would increase. Table 12 shows the amount of potential black-woodpecker habitat that would be treated. Alternative 4 would maintain more habitat and foraging resources for black-backed woodpeckers as compared to Alternatives 2 and 3.

Table 3-8. Acres of black-backed woodpecker habitat available in the project area by alternative and proposed treatment type

Modeled Black-backed Habitat	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Primary Habitat				
Total in Project Area	6374	6374	6374	6374
Treated by Intermediate Harvest	0	580 (9%)	578 (9%)	470 (7%)
Treated by Regeneration Harvest	0	1443 (23%)	1485 (23%)	1461 (23%)
Total Treated	0	2023 (32%)	2064 (32%)	1931 (30%)
Secondary Habitat				
Total in Project Area	20549	20549	20549	20549
Treated by Intermediate Harvest	0	1787 (9%)	1610 (8%)	1436 (7%)
Treated by Regeneration Harvest	0	4402 (21%)	4491 (22%)	4254 (21%)
Total Treated	0	6189 (30%)	6100 (30%)	5691 (28%)

At the expense of providing for a more healthy forest, foraging resources would be substantially reduced. Since this species avoids feeding in openings, regenerative type harvest would negatively impact this species.

Regeneration harvest would eliminate black-backed woodpecker habitats from treated areas in both the short-term and long-term by reducing the incidence of insects and disease that might draw in black-backed woodpecker and snags used for nesting and foraging (live, mature trees that could become snags) would be removed. The few remaining trees in each treatment unit would not provide substantial foraging or nesting opportunities.

Intermediate harvest would substantially reduce the quantity of nesting and foraging habitats because the amount of snags, down logs, and insect and diseased trees would be reduced in the short-term and because the number of trees available to die and become snags and logs in the long-term would also be reduced.

Natural fuels treatment through the use of prescribed fire could directly produce scattered dead trees, but most would likely be of smaller diameter, but may still be of limited value to this species. The use of prescribed fire would destroy some existing snags, mainly ones in an advanced state of decay.

Proposed road and trail reconstruction/improvements, hand thinning, watershed improvements (plantings, culverts), and road decommissioning activities would not have an appreciable effect on black-backed woodpeckers or their habitat.

Disturbance from harvest, burning, and road improvement activities could displace woodpeckers and other species during the nesting season or deter use of some areas that could be used as nesting, foraging, or roosting areas while activities occur. This could directly affect the reproductive success of individuals and cause mortality of young if a nesting tree is felled.

Cumulative Effects

Geographic Boundary

Based on the ecology of black-backed woodpeckers, the cumulative effects analysis area is the Hungry Ridge project area. The time frame for cumulative effects is 80+ years which is about the time when forested stands begin to thin themselves and create snags either though natural processes or active management. Dead and dying trees attract the insects that black-backed woodpeckers feed on. Activities considered for cumulative effects are those that remove existing or future dead or dying trees that would provide foraging habitat for black-backed woodpeckers. This would include harvests of all types. Activities that reduce the potential for wildfire and epidemics or outbreaks of insect populations also reduces habitat for black-backed woodpeckers.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities are described in detail in the EIS and contribute to current habitat conditions. Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments. Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements.

Specifically, timber harvest, including regeneration, and commercial thinning, decreased the availability of mature forest habitats that are most susceptible to fire, insects, and diseases. Some of the past harvest may have directly reduced the amount of suitable habitat, while other harvest may have reduced the availability of stands that could develop into suitable habitat through fire, insect, or disease-related mortality in a relatively short period of time. Past timber harvest activities have created a patchy landscape across the watershed which has likely resulted in larger black-backed woodpecker home ranges than would be the case in unlogged habitats. Larger home ranges affect the energy reserves of animals as they must travel greater distances for their daily needs. Many past timber activities left few snags on the landscape that could be utilized for black-backed woodpecker foraging, nesting, or drumming sites.

Alternatives 2, 3, and 4 – Action Alternatives

Large stand replacing fires and insect-infested stands create the highest quality habitat for black-backed woodpeckers. Because of active fire suppression, habitat has been reduced for this species. Proposed management activities would reduce nesting, roosting, and foraging habitat for this species by improving overall tree/stand health. Alternatives 2, 3, and 4 could potentially create scatterings of dead trees but would also eliminate some habitat for this species and these actions would be cumulative to past, current and reasonably foreseeable actions.

Alternatives 2, 3, and 4, in combination with ongoing and future activities (DRAMVU and firewood gathering), in the project area would contribute to the loss of suitable black-backed woodpecker habitats in the project area. Fire suppression activities would continue to prevent fire-killed habitat for all alternatives. Within the project area, untreated stands would continue to die and create snags, providing low amounts of habitat. Access changes associated with the DRAMVU project and the reduction of cross country travel would help in alleviating the loss of snags and logs taken by firewood gatherers.

Action alternatives, in combination with ongoing firewood gathering in the project area contribute to the loss of suitable black-backed woodpecker habitats in the project area, by up to 31% depending on

alternative. Fire suppression activities would continue to prevent fire-killed habitat for all alternatives. Within the project area, untreated stands would continue to die and create snags, providing low amounts of habitat. Access restrictions associated with the DRAMVU project and the reduction of cross country travel would help in alleviating the loss of snags and logs taken by firewood gatherers.

Outside of the project area, habitat for black-backed and other woodpecker is being created due to insects and disease outbreaks. In addition, other areas of the Forest have and will burn, thus creating habitat for black-backed woodpeckers. Black-backed woodpeckers are capable of responding quickly to favorable conditions created by large, intense fires and insect outbreaks, and they can move several miles to take advantage of such opportunities. At the Forest level, impacts of the Hungry Ridge proposal and other projects in and around the watershed appear small.

Within the project area, untreated stands would continue to die and create snags, providing low amounts of habitat. At the Forest-wide scale, proposed treatments associated with the Hungry Ridge project would not affect the viability of the black-backed woodpecker because there is a large amount of available habitat Forest wide, there is a low-density use by black-backed woodpeckers in insect and disease outbreaks, and snags would be retained throughout the area.

Conclusion

Within the project area, untreated stands would continue to die and create snags, providing low amounts of habitat. Under Alternative 1 there would be no activities or disturbances to alter movements or temporarily displace black-backed woodpeckers within the project area. Therefore, there would be no direct or indirect effects to black-backed woodpeckers or their habitat. It is determined that there would be "*No Impact"* to black-backed woodpeckers or their habitat under Alternative 1.

Across the forest and the range of this species, there appears to be a considerable amount of potential habitat. Black-backed woodpeckers are capable of responding quickly to favorable conditions created by large, intense fires and insect outbreaks, and they can move several miles to take advantage of such feeding opportunities that develop in fire killed and stressed trees.

Black-backed woodpecker habitat is well distributed across the Northern Region and Nez Perce National Forest. At the project level, Black-backed woodpeckers could be affected. Individual woodpeckers may be disturbed by project activities under Alternatives 2, 3, and 4; however, this disturbance is not expected to affect their survival. Individuals would move away from areas of active treatment. Sufficient habitats are available outside the treatment units to support the local woodpecker population during project implementation. The change in habitat availability within the project area (up to 31 percent) would not affect the ability of Black-backed woodpecker to occupy the project area now or in the future, nor would it affect the availability of habitat at the Forest or regional levels. None of the alternatives is expected to cause any measurable change to the current low level of use of the project area by black-backed woodpeckers. At the Forest-wide scale, proposed treatments would not affect the viability of the black-backed woodpecker because there is a large amount of available habitat Forest wide, there is a low-density use by black-backed woodpeckers in insect and disease outbreaks, and snags would be retained throughout the area in untreated stands. **Alternatives 2, 3, and 4 "*May impact individuals or habitat, but will not likely result in a trend toward federal listing or reduced viability for the populations or species.*"**

4.3 Management Indicator Species

Management indicator species (MIS) were designated for the Nez Perce National Forest in the 1987 Forest Plan. Six of the 11 MIS species are also designated as "sensitive", "threatened", or "endangered", and have been previously discussed in those sections in this analysis or dismissed for further analysis: gray wolf, grizzly bear, peregrine falcon, bald eagle, bighorn sheep, and fisher.

The remaining MIS species that will be discussed in this section include Rocky Mountain elk, Shiras moose, pileated woodpecker, northern goshawk, and pine marten.

Elk

Elk are a management indicator species for commonly hunted big game species on the Nez Perce Forest. Elk are habitat generalists and use a diversity of forest types and structures that provide forage and hiding cover. They use meadows and early seral communities for foraging in spring through early summer. Elk forage more under the forest canopy from late summer through fall. During the winter, they rely upon low elevation, warm aspect, and snow free or snow limited areas for foraging, although adult bulls often winter at much higher elevations than cows and immature elk.

Elk are sensitive to disturbance. Road access and intensity of disturbance is generally thought to be more influential to elk than habitat parameters (Unsworth et al.1993). Studies indicate that elk respond less to constant non-stopping vehicle traffic than to slow vehicle traffic that stops periodically (Leege 1984). Roads built into elk habitat increase hunter access, increasing elk vulnerability to harvest (Unsworth et al.1993). Other literature on elk habitat modeling has suggested models on road effects, size of elk analysis unit, and other elk habitat considerations should be considered (Rowland et al. 2000, Rowland et al. 2005, Unsworth et al. 1998).

Elk are secure (G5/S4) in Idaho and across their range (NatureServe [accessed October 29, 2018]; Idaho Fish and Wildlife Information System [accessed October 29, 2018]).

Hunting pressure in Mill Creek is estimated as moderate to high. Forage is mainly in open old harvest units, open coniferous forests, and shrublands and comprises about 5% of the project area. Forest succession, wildfire suppression, and vegetation management activities (primarily timber harvest with associated road development) have changed summer habitat quality and distribution.

Affected Environment

Elk are known to occur in the project area. The majority of the analysis area is considered summer range for elk. Summer range overlaps with wintering areas, but animals tend to move to higher elevations as the snow melts and additional forage becomes available. Important habitat components on spring, summer, and fall range include foraging sites, hiding cover, and calving, rutting, and security areas. Herbaceous and shrubby forage availability and abundance in most old timber harvest units is declining. Some shrub species in the oldest units have attained small tree status and are mostly unavailable for forage. Tree canopy cover is increasing, causing a decrease in available forb, grass, and shrub forage. In some stands within the project area, along the Honker Road for example, elk forage is completely absent. Forage is mainly in open, old harvest units, open coniferous forests with low canopy cover, and shrublands. These areas comprise about 5% of the project area.

Hiding cover is abundant throughout the project area in mid-seral or older forest stands. Where available, younger forest stands also provide patches of hiding cover. Remote sensing data, past timber harvest, and past wildfire data were referenced to estimate 94% of the project area currently provides hiding cover.

The project area is located in the Idaho Dept. of Fish and Game's (IDFG) Game Management Unit (GMU) 15, which is one of three GMUs that constitute the Elk City Elk Management Zone (Zone). The most recent survey suggests population objectives are not being met in the Elk City Zone; however, the report also states survey results in 2015 are not representative of actual elk numbers due to poor survey conditions (Meints 2017). The 2008 report states, "cow elk numbers are stable to slightly increasing while numbers of bull elk are increasing" (Rachael 2014).

Target bull:cow ratios are 18-24 bulls per 100 cows and 10-14 adult bulls:100 cows in the Elk City Zone (Meints 2017). In 2008, surveyed bull:cow ratios were 20:100 and the adult bull:cow ratio was 15:100 for the Zone (Rachael 2014, Table 3-9).

Table 3-9. IDFG Elk Management Objectives & Current Status within the Project Area

	IDFG Objective		2008 Survey Results		2015 Survey Results[1]	
	Bulls	Adult Bulls	Bulls	Adult Bulls	Bulls	Adult Bulls
Elk City Zone (bulls per 100 cows)	18-24	10-14	20	15	10	5
Game Mgmt. Unit 15	200-300	100-175	169	126	NA[2]	NA[2]

[1]2015 survey results are not representative of actual elk numbers.
[2]IDFG no longer reports GMU-specific management status. Current status is reported at the Zone scale alone.

Winter range is primarily below 4,500 feet in elevation on southerly aspects and includes grasslands, brushfields, and timbered lands. Generally, winter range receives less snow and is located at lower elevations than summer range. During winter, cow elk seem to prefer shrub habitats, while bull elk favor more open timber types (Unsworth et al. 1998). Older bulls also tend to use higher elevation benches or ridges with heavier snowfall compared to habitat used by younger bulls and cows (Unsworth et al. 1998). The project area contains more northerly aspects and does not contain large patches of low elevation grasslands. Quality forage is an important component of elk winter range. Elk forage on grasses where available, but mostly consume shrub species and the tips of twigs from woody vegetation during winter. Shrub fields and conifer forests provide a higher proportion of winter forage than grassland sites in the project area. Species such as redstem ceanothus, serviceberry, mountain maple, choke and bitter cherry, and syringa provide much of the winter forage available to elk. The quality of winter forage is low as many of the shrubs are out of the reach of big game and decadent (in decline with excess dead material).

The Nez Perce Forest Plan (1987) designates Management Area 16 as big game winter range. MA16 provides about 3165 acres for elk winter range in the project area. The goal for MA 16 is “manage to increase usable forage for elk and deer on potential winter range.” Other MAs (timber, recreation, wild and scenic) would offer general elk habitat. MA16 is concentrated along the breaks of the South Fork Clearwater River and the lower portions of Mill Creek, Deer Creek, and Johns Creek. Noxious weeds and other invasive plant species, along with increased tree densities in low elevation, dry forest communities, are creating a downward trend in the quality of MA16 winter range in the project area.

The Hungry Ridge project has all or portions of seven elk analysis units (EAU). Table 3-10 lists the elk analysis units, Forest Plan objectives, and existing elk habitat effectiveness. Five of the seven EAUs are at or above Forest Plan objectives, while two EAUs are currently below Forest Plan objectives. In the Adams, Big Canyon, and Lower Mill EAUs, security is lacking.

Table 3-10. Forest Plan elk objectives and existing habitat effectiveness

Elk Analysis Unit (EAU) Name	EAU Number	Forest Plan Elk Habitat Effectiveness Objective (%)	Elk Habitat Effectiveness Existing Condition (%)	Security Areas (≥20% Recommended)	
				Acres in EAU[1]	% of EAU
Adams	*0305013071*	*50*	40	*0*	*0*
Lower Johns	*0305014181*	*50*	47	*1037*	*26*
American Creek	0305014182	50	52	1549	28
Big Canyon	0305014191	25	36	290	10
Lower Mill Creek	0305014192	50	50	815	13
Upper Mill	0305014231	50	71	1722	26
Trout Creek	0305014241	75	85	5903	90

[1]Does not include acres in security patches smaller than 250 acres

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments would occur with this alternative. No road construction would occur. Forage availability would not be improved and thermal and hiding cover would not be reduced by harvest activities. Under this alternative there would be no activities or disturbances to alter movements or temporarily displace elk within the project area.

There would be no short-term changes to summer elk habitat under this alternative. Summer elk habitat potential would be maintained as depicted by the existing condition, in the short-term. As a result of fire suppression, succession would continue. Open patch sizes would continue to decrease as ingrowth fills and matures in old openings; conifers would encroach in grasslands. This process decreases the nutritional value and availability of transitional and summer forage. If wildfires were to occur in the area, forage areas could be replenished, but existing cover would decrease. As insect and disease activity continues, areas that currently provide cover will become too open to serve that function. As numerous dead trees fall to the ground, debris may become too deep for elk to move through in certain areas.

There would be no direct effects to elk winter range under this alternative, as no project activities would occur. There would be continued deterioration of MA16 winter range.

Alternatives 2, 3, and 4 – Action Alternatives

Direct effects to elk habitat would include shifts in the distribution and abundance of cover and forage. In general, cover would be removed where forage is created through timber harvest. Habitat would also be removed during road construction. Treatments would be beneficial by increasing forage production in timber units by reducing tree densities in lower elevation, dry forest communities. Moist sites, such as wet meadows, ponds, seeps, and springs, are important to elk and would be protected by RHCA buffers as part of project implementation. Calving habitat within the project area is primarily in conjunction with saddles, benches, and draw thickets among the steep terrain near water. Action alternatives would not significantly impact calving habitat except if activities occur during the calving season (May 15 to June 15).

Rowland et al. 2018 lists covariates that were most important in predicting elk habitat use as: slope, digestible energy (nutrition), distance to edge (cover), and distance to open road. Suggesting while distance to open roads and cover is important, nutritional value and availability of forage is a better predictor of elk habitat use.

Prescribed burning activities to reduce natural fuel levels have the potential to also improve forage conditions for elk by stimulating growth of grasses and shrubs and removing decadent material. This would be an improvement in both summer and winter habitats. Spring burns may not be intense enough to kill the undergrowth of decadent shrubs and young conifers; therefore, spring burning may not improve habitat conditions to any great degree. In addition, burning in the spring when young of the year are born can cause undue stress and possibly injury or mortality of newborn calves hiding in the slash and undergrowth. These low elevation communities are adapted to burning in the late summer/early fall. Late summer/fall burns may be more effective at obtaining the desired results of rejuvenating shrubs and grasses and reducing shade-tolerant tree species undergrowth which may also result in fewer losses of large ponderosa pine to wildfire.

Alternative 2 would create an additional 6,204 acres of early-seral habitats, 6,472 with Alternative 3, and 5,959 acres with Alternative 4. This in an increase of approximately 20-22% across the project area, depending on the alternative.

None of the beneficial effects from prescribed fire would be achieved with Alternative 4 as prescribed fire activities are not part of this alternative; therefore, Alternative 4 would not improve habitat as much as the other two action alternatives.

EHE was calculated as a measure of the effects of each action alternative on summer elk habitat (Table 3-11). Certain assumptions were made for this analysis: 1) temporary roads were not included in the calculations because they would not be open for public access and would be obliterated in one to three years, 2) it was assumed existing access restriction would be maintained on all roads associated with the Hungry Ridge project, and 3) new specified roads would be closed yearlong to motorized vehicles. The obliteration of roads would not change the amount of security within the EAUs or the project area as most

of these roads are already closed yearlong to motorized vehicles. Allotment acres and AUMs would not change; therefore, EHE calculations related to livestock use would remain unchanged.

Due to the current lack of summer forage and excess availability of cover, the proposed activities would increase EHE in all seven EAUs. While timber harvest and prescribed burning would remove some cover to create forage, the remaining cover would be more than adequate across all EAUs. While some harvest units are relatively large in acreage, elk will still benefit from foraging around the inner edge of the units.

Five of the EAUs would remain at above their Forest Plan objective following implementation of the Hungry Ridge project. EHE in one EAU would increase to above the Forest Plan objective (Lower Johns) and one would increase, but not enough to meet the objective (Adams) (Table 3-11).

Table 3-11. Elk habitat effectiveness by Elk Analysis Unit and Alternative

Elk Analysis Unit	Forest Plan Objective (%)	Alternative 1 - Existing Condition (%)	Alternative 2 (%)	Alternative 3 (%)	Alternative 4 (%)
Adams	50	41	44	44	44
American Creek	50	50	50	50	50
Big Canyon	25	36	36	36	36
Lower Johns	50	50	51	51	51
Lower Mill Creek	50	70	71	71	71
Trout Creek	75	82	86	86	86
Upper Mill	50	63	64	64	64

Elk could be subject to short-term disturbance during implementation of the action alternatives. Short-term effects would be limited to displacement from noise associated with project activities if individuals are within the area at the time of work. However, disturbance of individuals during project implementation is not expected to substantially interfere with normal breeding or feeding behavior. As mitigation, the integrity of road closures would be maintained as these roads are closed to the public and are only used for administrative purposes to implement activities associated with the Hungry Ridge project. In addition, all temporary roads are closed to the public during operations and decommissioned following the use of these temporary roads.

Several studies discuss the impacts of open roads: elk tend to avoid areas with high open road densities, elk use areas with closed canopies away from open roads, and the vulnerability of elk during the hunting season increases as open road density increases (Rowland et al. 2000, Rowland et al. 2005, Wisdom et al. 2005, McCorquodale 2013, Naylor 2009, Ranglack 2016, Wisdom et al. 2018).

Elk vulnerability to hunting may increase within the project area (not at the GMU scale) in the short-term with the loss in cover as trees are removed in harvest units (Rowland et al. 2000, Rowland et al. 2005, Wisdom et al. 2005). This is also dependent on topography, vegetation retention, or road location. Open road densities within the project area are approximately 1.14 miles per square mile. This would reduce to 1.09 miles per square mile following Alternative 2 project activities and 1.05 miles per square mile following Alternatives 3 and 4 activities. There would be a decrease of miles of open roads by 2.55 miles under Alternative 2 and 4.04 miles under Alternatives 3 and 4 in the project area. This is below what Rowland et al. 2000 consider high open road densities (2.41 miles per square mile). By maintaining existing road access restrictions and reducing total open road densities, as well as not increasing the amount of open roads, elk habitat would be maintained (Frair et al. 2008).

Elk vulnerability estimates are used to illustrate the effect of open roads and hunter densities on bull and cow elk mortality during the fall hunting season(s). By comparing bull:cow ratios from elk vulnerability estimates with target and surveyed bull:cow ratios within each GMU, managers can assess how proposed open road density changes will affect bull:cow ratios. Hunter density is 8.9 hunter days per square mile for GMU 15. There are approximately 1.5 miles per square mile of open motorized road and trail (only includes Forest Service roads and trails) within GMU 15. The amount of roads open to motorized traffic would be reduced by approximately 2.5 miles under Alternative 2 and 4 miles under

Alternatives 3 and 4. Because elk vulnerability is calculated at the game management unit scale (Servheen et al. 1997), the reduction in open road densities from the Hungry Ridge project would not be detectable at the game management unit. Thus, there would be no change in elk vulnerability from the Hungry Ridge project at the GMU scale; ratios would remain at 19.2 bulls per 100 cows. Travel management changes proposed in the Designated Routes and Motor Vehicle Use (DRAMVU) project were also used to assess elk vulnerability. The future DRAMVU decision will change the season of use on some roads in the project area and will close the entire Forest to off-road motor vehicle use. Vulnerability estimates did not change when including the DRAMVU preferred alternative.

Approximately 34% of the project area provides security. Security areas are those areas that elk go to in times of stress. There are several, large security patches behind yearlong closed roads and along the break of Mill and Johns Creeks. The roads proposed for decommissioning are roads that are already closed yearlong to all motorized used, thus the amount of security would associated with the project would not change.

Temporary roads are proposed in both Alternatives 2 and Alternatives 3. In Alternative 2, approximately 14.7 miles of temporary road construction is proposed, of which 9.9 miles would be on existing road templates. There would also be a temporary reduction (approximately 21 acres) in cover and forage with the loss of vegetation associated with constructing 4.8 miles of new temporary roads. This reduction in vegetation would be of a short duration because these sites would be revegetated. There are approximately 25.7 miles of temporary road construction proposed under Alternative 3. Approximately 16.4 miles of temporary road would be constructed on an existing template, while 9.5 miles would be new temporary road construction. All temporary roads would be decommissioned after activities are completed in an area. There would also be a temporary reduction (approximately 43 acres) in cover and forage with the loss of vegetation associated with constructing 9.5 miles of new temporary roads. This reduction in vegetation would be of a short duration because temporary roads would be decommissioned and revegetated. Minor ridge top areas may be impacted in the short-term, but is not expected to create a barrier to wildlife emigration or immigration.

Under Alternative 2, there are approximately 4.7 miles of new permanent road construction. The construction of new permanent roads would result in a permanent loss in vegetation, approximately 28 acres. The proposed permanent road into Trout Creek (Rd 9413 extension) is along a major ridgeline, which is used as travel corridor by many wildlife species, especially big game. The construction/addition of the Trout Creek route impacts a large wildlife security area, but would be closed to motorized travel and therefore not impact elk security. Also, the Trout Creek EAU, would continue to provide more than adequate availability of security.

Alternative 3 does not include any new permanent road construction only temporary roads which would be decommissioned. However, the effects of temporary roads along major ridge and travel corridors would have the same impacts as the other action alternatives. There would be a loss in vegetation with the construction of the road, but this would be temporary as the roads would be decommissioned after use. However, the loss of the overstory vegetation would take decades to grow back and provide enough cover for animals to use them.

Temporary roads constructed for harvest activities would be closed to public motorized use and decommissioned after use and would not add to existing road densities within the project area or watershed.

The obliteration of approximately 25-36 miles of road, depending on the alternative, would not change the amount of security within the elk units or the project area; however, revegetating these disturbed areas would improve fragmented habitat.

Proposed road/trail improvement activities, watershed improvement activities, riparian plantings, meadow restoration, and hand thinning around private land are not expected to impact elk.

Cumulative Effects

Geographic Boundary

The geographic boundary for assessing cumulative effects on elk summer habitat effectiveness is the elk analysis unit associated with the project area. The timeframe for cumulative effects is 20-30 years, which is about the time it takes for new plantations to restore elk hiding cover in the harvest areas.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities summarized in detail in the EIS and have contributed to current habitat conditions. Past fires, fire suppression, and timber harvest across the analysis area have resulted in a complex matrix of forested interior habitat, edge, ecotones, and openings in various stages of succession. Past timber harvest converted hiding and thermal cover into seedling stands, some of which have progressed to sapling hiding cover. Some of these stands have been pre-commercially thinned in the last couple of years, thus reducing hiding cover. Past timber harvest and road building has also narrowed or severed forested connections. Harvest activities have removed hiding and screening cover along open and closed roads, and human population and access are dramatically increased over historical conditions. Fire suppression has caused dense, depauperate conditions of mid-successional forests.

Noxious weed treatments would occur in the project area under the current weed management plan in the future. Reducing the incidence of weeds, especially in winter range improves forage conditions for elk. Weed treatments that reduce weed competition with or spread into elk forage areas would be beneficial to elk.

Ongoing maintenance of road and trails is considered routine and ongoing, with virtually no effects to elk.

Ongoing permitted cattle grazing can reduce the quality and quantity of forage available for elk and other big game species.

Numerous recreational opportunities across the project area, including big game hunting, can cause displacement or mortality of elk. Road construction has increased open road density and caused the loss of security areas, increasing vulnerability to hunting and decreasing habitat effectiveness.

Alternatives 2, 3, and 4 – Action Alternatives

The Hungry Ridge project would increase forage while reducing cover as a consequence of the proposed treatments. Temporary roads would be built in these alternatives and would remain closed to public access. The project activities would disturb elk during the period of implementation. Elk would move away from these areas, but may return during hours of darkness to forage on the lichens or younger leaves on the felled trees. Upon completion of the timber sales, all temporary roads would be decommissioned. Security areas would be retained. Indirect effects may be increased pressure on elk from wolves and other predators, due to the reduction of canopy and hiding cover from harvest and burning activities. The effects of livestock grazing, wildfires, fire suppression, and predator management would be similar to existing conditions.

Harvest and fuels treatments has the potential to change forage species available to elk and reduce cover within the treatment buffers. Ongoing permitted cattle grazing can reduce the quality and quantity of forage available for elk. The incidence of noxious weeds in the project area also reduces the quality of forage for elk in the drier habitat communities.

The project would meet the Forest Plan Goal for MA-16 by improving the quality of winter range habitat for elk through reducing trees densities and improving the quality of forage/browse species through harvest and burning activities.

Conclusion

When assessing Hungry Ridge project activities alone, EHE in all EAUs would increase or remain the same due to the creation of forage within harvest and prescribed burning units.

Maintaining existing road closures, not increasing the amount of open roads, and decreasing overall total road densities would slightly decrease disturbance from motorized vehicles in all but one EAU. Improvements in the quality and quantity of forage and maintaining more than adequate amounts of cover would improve EHE in all but one EAU. The proposed action alternatives are not enough to cause a

change that is detectable in elk vulnerability estimates. The amount of elk security within the elk unit would not change.

Winter range and summer habitat conditions, especially the quality of forage/browse species, would be improved by reducing tree densities through harvest and burning activities and continuing to reduce the incidence of noxious weeds through the Forest's noxious weed program. Motorized access in the project area would decrease slightly. Motorized access into elk security would not change as a result of this project, thus security would be maintained. **While project activities may remove some cover and increase vulnerability within the project area, elk populations are not likely to be affected at the Forest level or across the range of the species and would benefit from the increased availability of summer forage.**

Moose

Across the moose's range in North America, important moose habitats include high forage-producing, early-successional forests, shrublands, and aquatic habitats, and mature, closed-canopy conifer or conifer-hardwood forests. Herbaceous forage and deciduous browse include shrubby, open upland habitats—such as logged areas, burns in early succession, and subalpine shrublands—and aquatic habitats in spring and early summer. Closed-canopy areas are used in the fall and winter. In Idaho, moose occur mainly in mountainous conifer forest. Forest vegetative types used by moose include grand fir and subalpine fir. Forage species browsed by moose in northern Idaho during summer are generally fire adapted and shade intolerant (Schrempp 2017).

While older research focused on winter range for moose habitat management, specifically, grand fir forest types with an understory of Pacific yew (Pierce and Peek 1984, Peek et al. 1987); more recent research suggests summer forage quality and availability is the most limiting habitat factor impacting moose populations across northern Idaho today (Schrempp 2017). Moose are colonizers of early seral habitat, and there are many examples where fire and logging were associated with range expansion and population increases (Peek et al. 1976, Rempel et al. 1997, Milner et al. 2013). Without continued maintenance and creation of early seral vegetation communities, moose populations are likely to decline over long time periods. Due to fire suppression over the past several decades, the quality and availability of moose forage in the project area has declined.

Winter range is characterized by double-canopy coniferous forests, which intercept significant amounts of snow and also provide palatable evergreen forage. Grand fir–Pacific yew habitats fit these criteria and are favored for winter foraging. Forest fragmentation from harvest has reduced patch size and interior conditions, and isolated Pacific yew stands. The project area does contain small patches of grand fir–Pacific yew communities and moose have also been observed foraging on other shrubs and aquatic vegetation in the project area.

Moose are secure (G5/S3) in Idaho and across their range (NatureServe [accessed February 11, 2019]; Idaho Fish and Wildlife Information System [accessed February 11, 2019]). Some moose populations appear to be increasing and seem to respond favorably to extensive habitat alteration by silvicultural practices as early-seral plant communities are created (Nadeau 2016). Other populations may be displaced or eliminated because they cannot adapt to habitat changes, particularly where yew thickets are eliminated through logging and where increased road densities make moose more vulnerable to harvest.

Moose have expanded their range in parts of Idaho and into Washington, Oregon, and Utah. Based on harvest record and hunter reports, moose populations in the Clearwater Region are declining (Nadeau 2016). Data on moose population size are difficult to obtain and moose are counted incidentally to elk surveys (Nadeau 2016). A sightability survey was conducted in 2000 in GMU 15. The results produced large confidence intervals due to an inability to detect animals under heavy canopy cover and proved low in value.

While long-term population trends are unknown, population numbers are large enough to support hunting in portions of the Clearwater Region and across the State. However, populations in GMU 15, which encompasses the project area, are currently not large enough to support a hunting season. Hunting permit reductions were implemented prior to the 2013-2014 moose hunting seasons due to low

population performance (Hunt Areas not meeting management criteria of greater than 75% hunter success and greater than 35 inch antler spread) (Nadeau 2016).

Affected Environment

The analysis area for moose is the project area.

There is no Management Area 21, winter moose habitat, designated within the Hungry Ridge project area. Moose winter habitat can also be found in vegetation response unit 7 (VRU 7), grand fir/Pacific yew communities.

There is approximately 1407 acres of VRU 7 in the project area. Approximately 277 acres (20%) of VRU 7 has been harvested from 1986 through 2004 with regeneration harvest methods.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments would occur with this alternative. No road construction would occur, nor would hiding cover be reduced from harvest activities. Under this alternative there would be no activities or disturbances to alter movements or temporarily displace moose within the project area.

Overall, the existing condition would not change under this alternative. Continued fire suppression activities and forest succession would result in a decline in younger stands and openings used by moose during summer. Conifer-shrub and mountain shrub cover types would decline in amount and distribution, as would the size of open patches as ingrowth fills and matures in old openings. Mature and old growth forests with a Pacific yew understory would remain intact barring a wildfire. The long-term impact of forest succession is decreased quality and availability of moose forage and increased likelihood of stand-replacing fires which would result in the loss of potential winter habitat, but increase forage.

Alternatives 2, 3, and 4 – Action Alternatives

Action alternatives would cause disturbance to individuals during implementation. Disturbance of individuals during project implementation would not cause, or is unlikely to cause injury or decrease productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior but may temporarily alter habitat use patterns.

Recent research suggests forage is an underlying factor in declining moose populations in northern Idaho (Schrempp 2017); therefore, moose would benefit from increased forage production resulting from vegetation treatments proposed in the Hungry Ridge project. Road decommissioning would also be beneficial.

Moose could be subject to short-term disturbance effects under the action alternative. Short-term indirect effects would be limited to displacement from noise associated with project activities if individuals are within the area at the time of work. Prescribed burning activities in the spring at times when young of the year are born can cause undue stress and possibly even cause injury or mortality of the newborn calves hiding in the slash and undergrowth.

Prescribed burns in harvest units would stimulate sprouting of moose browse species. The production of forage species would also improve as canopies are opened. However, the season of the burn depicts which species would be favored and how much of the dead material is consumed.

Moist areas, such as ponds, streams, and seeps, which are used by moose during summer months, would be protected by RHCAs and the fact that no harvest activities would occur inside RHCAs.

Pacific yew is a shade tolerant species. Tirmenstein (1990) mentions that Pacific yew is sensitive to drastic changes in the overstory canopy caused by harvest and burning. Other studies have shown that it adapts to unshaded conditions (Tirmenstein 1990, Bolsinger and Jaramillo no date), but is intolerant of fire as it is sensitive to heat damage, especially broadcast burning after timber harvest.

Early-seral forest conditions created from silvicultural treatments would provide additional foraging areas for moose. Approximately 302 acres (21%) of moose winter habitat in VRU 7 is slated for harvest with about 1 mile of temporary road construction. Approximately 298 acres (21%) of regeneration harvest and

4 acres (<1%) of commercial thinning is proposed. These new units would abut old harvest units creating large openings (>200 acres in size) that could be used by moose and without a hunting season in GMU 15, would not increase regulated harvest (Peek et al. 1976).

Temporary roads are proposed in both Alternatives 2 and Alternatives 3. In Alternative 2, approximately 14.7 miles of temporary road construction is proposed, of which 9.9 miles would be on existing road templates. There would also be a temporary reduction (approximately 21 acres) in cover and forage with the loss of vegetation associated with constructing 4.8 miles of new temporary roads. This reduction in vegetation would be of a short duration because these sites would be revegetated. There are approximately 25.7 miles of temporary road construction proposed under Alternative 3. Approximately 16.4 miles of temporary road would be constructed on an existing template, while 9.5 miles would be new temporary road construction. All temporary roads would be decommissioned after activities are completed in an area. There would also be a temporary reduction (approximately 43 acres) in cover and forage with the loss of vegetation associated with constructing 9.5 miles of new temporary roads. This reduction in vegetation would be of a short duration because temporary roads would be decommissioned and revegetated. Minor ridge top areas may be impacted in the short-term, but is not expected to create a barrier to wildlife emigration or immigration.

Under Alternative 2, there are approximately 4.7 miles of new permanent road construction. The construction of new permanent roads would result in a permanent loss in vegetation, approximately 28 acres. The proposed permanent road into Trout Creek (Rd 9413 extension) is along a major ridgeline, which is used as major travel corridor by many wildlife species, especially big game. The construction/addition of the Trout Creek route severs a large wildlife security area, but would be closed to motorized travel.

Alternative 3 does not include any new permanent road construction only temporary roads which would be decommissioned. However, the effects of temporary roads along major ridge and travel corridors would have the same impacts as the other action alternatives. There would be a loss in vegetation with the construction of the road, but this would be temporary as the roads would be decommissioned after use. However, the loss of the overstory vegetation would take decades to grow back and provide enough cover for wildlife to use them.

Temporary roads constructed for harvest activities would be closed to public motorized use and decommissioned after use and would not add to existing road densities within the project area or watershed.

The obliteration of approximately 25-36 miles of road, depending on the alternative, would not change the amount of security within the elk units or the project area; however, revegetating these disturbed areas would improve fragmented habitat.

Proposed road/trail improvement activities, watershed improvement activities, riparian plantings, meadow restoration, and hand thinning around private land are not expected to impact moose.

Cumulative Effects

Geographic Boundary

Based on moose ecology, the cumulative effects analysis area is the USGS HUC 12 subwatersheds associated with the project area: Mill Creek (23,459 ac) and Lower Johns Creek (26,148 ac). The timeframe for cumulative effects is 20-30 years, which is about the time it takes for new plantations to restore moose forage and hiding cover in the harvest areas.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities are described in detail in the EIS and contribute to current habitat conditions. Past timber harvest, including the Hungry Mill project, has resulted in the loss of medium and large trees, thus creating early-seral summer forage conditions for moose. Timber harvest increased the availability of early seral habitats, which provided foraging opportunities. Road construction increased open road density and caused the loss of security areas, increasing vulnerability to hunting and decreasing habitat quality. More recently, roads have been stored or decommissioned, causing a trend toward increased security, decreased vulnerability, and increased habitat quality. Human disturbance as it

relates to wildlife security and human-induced mortality and succession are the actions with the greatest effect on moose in the project area. All action alternatives would increase the presence of early seral habitats. decommission roads, and maintain current access restrictions. The timing of road construction and reconstruction, timber harvest, and burning could delay the effectiveness of road improvements.

Relevant ongoing actions within the analysis area include recreation, road/trail maintenance, fire suppression, activities from the Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments.

Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements.

Watershed restoration/improvement projects are considered to be beneficial by improving habitat conditions and security via road decommissioning.

This project and others in the area would increase forage while reducing cover as a consequence of the proposed treatments. These actions are not expected to have any measurable effect on the moose population in the analysis area. Access changes within and adjacent to the project area (DRAMVU) would also contribute to the ongoing trend of reduced motorized access, which would increase security, decrease vulnerability, and increase habitat effectiveness.

Alternatives 2, 3, and 4 – Action Alternatives

This project, in addition to the Adams and Doc Denny projects, would increase the quality and availability of moose forage present in the analysis area. Cover would decrease within harvest units, but remain widely available across the analysis area. Overall, these actions are not expected to have a negative effect on the moose population in the analysis area. Access changes within and adjacent to the project area (DRAMVU) would also contribute to the ongoing trend of reduced motorized access, which would increase security, decrease vulnerability, and increase habitat effectiveness. Alternative 2 would add an additional 298 acres of regeneration harvest to VUR 7. This would create large openings and bring the total amount of regeneration harvest in VRU 7 within the project area to about 41%.

Conclusion

Early-seral shrub communities would be created with harvest and prescribed burn activities, thus improving summer forage for moose. The majority of the regeneration harvest types within grand fir mature forests are clearcut or seed tree harvest creating large openings with little overstory canopy cover. However, mitigations are in place to retain pockets of grand fir and Pacific yew, thus retaining winter habitat within the project area. While moose populations may be declining in portions of the Clearwater Region, all indications are that healthy populations are well distributed and expanding across other parts of Idaho and the western states. **Actions associated with the Hungry Ridge project would increase moose forage, which is the most limiting factor for moose in the project area. A slight reduction in yew/grand fir habitat (VRU 7) resulting from the proposed alternatives would not affect moose population viability on the Nez Perce National Forest.**

Northern Goshawk

The northern goshawk is considered a late-seral or old growth associated species. Northern goshawk was selected as a Nez Perce Forest management indicator species to represent old forest dependent species. Nesting habitat is the most restrictive requirement necessary for goshawk presence. Nests are generally constructed in the largest trees of dense, mature stands with high canopy closure (60-95 percent) and sparse groundcover, near the bottom of moderate slopes, and near water (Squires and Reynolds 1997, Hayward and Escano 1989, Hayward et al. 1990, Bull and Hohmann 1992, Moser 2007).

The northern goshawk is a large forest raptor that occupies forested habitats throughout the northern hemisphere. Although goshawks nest in a variety of habitat types, they often prefer stands of mature timber with open understories and closed canopies; nest stands are often located near water, roads, and other forest openings (Squires and Reynolds 1997). Most literature with regards to goshawk nesting habitat depict that goshawks tend to nest more frequently on north aspects (Reynolds et al. 1992, pg. 13),

yet some studies have observed that in mixed conifer types there is no preference for north aspects, except for ponderosa pine types (Hayward et al. 1990).

Northern goshawk habitat in the western U.S. is characterized by mature to old growth forest with dense canopy cover. Typical goshawk nesting habitat in western Montana and northern Idaho is mature to overmature conifer forest with a closed canopy (75-85% cover) on a moderate slope (15-35%) facing north, at or near the bottom of a slope (Hayward and Escano 1989). Relatively large diameter trees, and wide spacing of trees and foliage, allow birds to fly beneath the upper canopy. Goshawk have been found to use the same nesting area for decades, and goshawk territories typically contain a number of alternate nests (Patla et al. 1995). While goshawk are territorial and may defend their nest area and post-fledgling areas, pairs are not likely to defend the 5,000 acre home range as observed where adjacent territories overlap (Brewer et al. 2009).

Goshawks are rated secure across its range (global rank G5) and are rare or uncommon but not imperiled (state rank S3) in the state of Idaho (Idaho Fish and Wildlife Information System [accessed February 26, 2019]; S3 vulnerable NatureServe [accessed February 26, 2019]). Current BBS data are insufficient to allow statistical analysis of population trends for the goshawk, either nationally or for the state of Idaho (Sauer et al. 2011); however, based on habitat requirements and trends (Samson 2006a), local populations are likely stable and may be increasing. Habitats on the Nez Perce National Forest contribute to a viable population of goshawks at a regional scale (Samson 2006b). The estimated population level for goshawks is at the state population target noted in “Partners In Flight Continental Priorities and Objectives for Idaho” (Rosenberg 2004).

Population trends were reviewed across a larger scale on January 2, 2015, from the USGS – Patuxent Wildlife Research Center’s North American Breeding Bird Survey web site (Sauer et al. 2011 http://www.mbr-pwrc.usgs.gov/bbs/bbs.html). For the entire United States, the BBS data shows an upward trend in the northern goshawk population of 2.03% per year since 2002 (2002-2012) and survey-wide, an increase of 2.99% per year. In the United States for years 1966-2009, northern goshawks are categorized as an “declining species”, based on non-significant trends.

Affected Environment

Goshawks are known to occur on the Nez Perce-Clearwater National Forest. As a result of surveys conducted for goshawks in 2013, 2014, 2015, and 2016, three goshawk territories have been identified within the Hungry Ridge project area.

For this analysis, goshawk nesting habitat is defined medium and large trees (greater than or equal to 15 inch dbh) with greater than 60% canopy cover. There is approximately 13,659 acres of potential nesting habitat in the project area for goshawks. Steep slopes also reduce the value of the area as being considered goshawk nesting habitat.

Foraging habitat for goshawks is defined as any vegetation greater than 10 inch dbh and greater than 10% canopy cover (including nesting habitat). Hunting may also occur along the edges of old harvest units. Approximately 25,343 acres are considered potential goshawk foraging habitat.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments would occur with this alternative and current vegetative processes would continue. In general, mature, high-canopied habitat would increase as forest succession continues to fill in understories and increase stand canopy closure. In predominantly mixed conifer stands, additional trees would die as a result of insect and disease activity, and dead trees would eventually fall to the ground.

Fuel build-up resulting from fire suppression activities would continue, thereby increasing the likelihood of a stand-replacing fire. Stand-replacing fires could potentially reduce mature and old growth habitat across the project area depending on the size and severity of the disturbance. Similarly, fuel loads along streams and RHCAs would continue to increase and may expose these environments to intense fires.

Alternatives 2, 3, and 4 – Action Alternatives

It is assumed that silvicultural treatments that encourage the development of large trees (greater than 20 inches diameter at breast height) over the project area would benefit goshawk-nesting habitat. However, any timber harvest that reduces the canopy closure below 60 percent would reduce the potential for those stands to be considered potential nesting habitat. The changes in habitat acres are outlined in the table below by alternative. Alternative 4 would modify the fewest acres of goshawk nesting habitat (about 32% of existing nesting habitat), and Alternative 2 would modify the greatest acreage (about 34% of existing nesting habitat). The least amount of foraging habitat would be harvested with Alternative 4 (about 28%), while Alternatives 2 and 3 would harvest about 30%.

Table 3-12. Summary of goshawk habitat available in the project area proposed for treatment by alternative and treatment type

Modeled Goshawk Habitat	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Nesting Habitat (ac)				
Total in Project Area	13659	13659	13659	13659
Treated by Intermediate Harvest	0	921 (7%)	820 (6%)	804 (6%)
Treated by Regeneration Harvest	0	3696 (27%)	3724 (27%)	3561 (26%)
Total Treated	0	4617 (34%)	4557 (33%)	4365 (32%)
Foraging Habitat (ac)				
Total in Project Area	25343	25343	25343	25343
Treated by Intermediate Harvest	0	2352 (9%)	2164 (9%)	1891 (7%)
Treated by Regeneration Harvest	0	5240 (21%)	5361 (21%)	5092 (20%)
Total Treated	0	7592 (30%)	7525 (30%)	6983 (28%)
Goshawk habitat also classified as MA20 Old Growth (ac)				
Total Treated	0	68	0	0

Most of the new harvest units are adjacent to previous harvest units creating extremely large forest openings over several hundred acres in size, which are devoid of standing snags and down wood. This reduces the likelihood that goshawk will use the openings in harvested areas, due to the loss of large diameter trees and snags used as perch site in foraging areas.

Regeneration harvest methods tend to eliminate nesting habitat by reducing stand structure and canopy cover. The few remaining trees in each treatment unit would not provide suitable nesting sites or the structural diversity that is important in supporting high densities of goshawk prey (Reynolds et al. 1992). Based on a study in northern Idaho (Moser 2007, pg. 18), it was determined that timber harvest activity within a nest area did not appear to affect goshawks until the nesting habitat in the territory fell below 39%. Based on information obtained from the siviculturists, regeneration harvest types (clearcuts, seedtree, shelterwood) would have 30% canopy cover or less remaining post-harvest. This is below the 39% cover threshold observed by Moser (2007). Approximately 32-34% of the nesting habitat would be reduced with timber harvest as the canopy cover and amount of trees remaining would be below what goshawks would use for nesting (Table 3-13). Foraging opportunities would increase in these areas.

Intermediate harvest would reduce the quality of nesting and foraging habitats in the short-term because the amount of snags, down logs, and other components of structural diversity would be reduced. However, this type of treatment has potential long-term benefits in all of these habitat types that may outweigh the short-term effects. One of the primary benefits, particularly in the dense, mid-aged stands typical of the analysis area, is decreased density of trees in the understory (Kennedy 2003). An open understory facilitates prey identification and capture because goshawks hunt primarily by sight (Reynolds et al. 1992). However, opening up forested stands can also increase competition and predation by other raptors, such as great horned owls (Kennedy 2003). In the long-term, tree growth would increase canopy

density, which would in turn reduce predation risk and competition. Down wood and other structural components would also increase, benefiting prey populations.

Within a goshawk home range, it is desirable to retain 240 acres of nesting habitat per home range (~5000 acres). After harvest, there would be about 9900 acres of nesting habitat remaining in the project area; enough habitat to support the three known goshawk territories within the project area. However, the most northern goshawk territory would have a higher percentage of fragmentation around the area surrounding the known nests due to the amount of regeneration harvest in the vicinity of known nest locations. No-harvest buffers would be placed around known and any additional nests that are found during layout or implementation of the project. These buffers along with requiring that no work activities occur during the breeding and brood rearing timeframes would lessen the impacts to goshawks and their young.

The construction of temporary roads for harvest would temporarily eliminate available nesting and foraging habitat. However, these roads would be decommission and would be revegetated, but it would take decades for full revegetation of the roads.

Alternative 2 would harvest in MA20, while Alternatives 3 and 4 would not. The treatement in MA20 is designed to remove the younger understory vegetation in the drier old growth habitats and reduce the competition and ladder fuels. Even though other mature or over-mature area may be harvested, large-diameter, oversized trees would be retained in harvest units to provide structural diversity. Sufficient habitat would remain unaffected by the proposed actions to continue to support northern goshawks and the species they represent within the watershed and across the forest.

Proposed road/trail improvement activities, watershed improvement activities, riparian plantings, meadow restoration, and hand thinning around private land would not have an appreciable effect on goshawk or their habitat.

Landscape burning activities to reduce natural fuel levels could directly produce scattered dead trees, but most would likely be of smaller diameter and may be of limited value to this species. The risk of a stand-replacing fire would be less than under alternative 1, but this is dependent on the amount the fuels which would be reduced to lower that risk. Foraging habitat may slightly improve by reducing the understory, small diameter trees and rejuvenate shrub species. This would improve foraging habitat and maneuverability of goshawks.

The proposed permanent road into Trout Creek (Rd 9413 extension) is along a major ridgeline, which is used as major travel corridor by many wildlife species. The construction/addition of the Trout Creek route severs a large old growth patch, including MA20. This road would impair the integrity of the old growth patch.

Alternative 3 does not include any new permanent road construction only temporary roads which will be decommissioned. However, the effects of temporary roads along major ridge, wildlife travel corridor, and old growth patch would have the same impacts as under alternative 2. There will be a loss in vegetation with the construction of the road, but this would be temporary as the roads would be decommissioned after use. However, the loss of the overstory vegetation would take many decades to grow back and provide enough cover for animals to use the area.

Individual goshawks may be disturbed by project activities under the action alternatives; however, this disturbance is not expected to affect their survival or reproduction. Individuals would move away from areas of active treatment and would not be injured or killed. Sufficient habitats are available outside the treatment units to support local goshawks during project implementation. Mitigation measures protecting nest stands and reducing the level of disturbance to nest and fledgling areas during breeding and brood rearing would reduce the disturbance or loss of productivity during implementation.

Cumulative Effects

Geographic Boundary

Based on average northern goshawk territory size, the cumulative effects analysis area is the project area. The time frame for cumulative effects is 150 years which is the approximate amount of time required

for stands to develop into a mature or older vegetative state and snags to develop into a condition that provides habitat for old growth and snag dependent species.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities are described in detail in the EIS and contribute to current habitat conditions. Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments. Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements.

Past insect outbreaks, fires, fire suppression, and timber harvest have left a mosaic of habitats on the landscape, but they are not characteristic of the patterns that occurred historically under a more natural disturbance regime. Timber harvest and road construction have reduced the amount and continuity of mature and old growth habitat across the project area. In addition, past actions frequently targeted medium and large trees and valuable ponderosa pine and western larch snags. These actions have left fewer appropriate stands, and trees within stands, that could be used by goshawks.

Past activities may have altered the availability of nesting habitat, forested connectivity, and prey habitat for goshawk. Past harvest activities and road building have frequently targeted medium and large trees. At the same time, active fire suppression since the early 1900s as allowed succession to continue in stands that have not been harvested. Relatively simple one- and two-storied stands have transitioned to more complex multi-storied stands with increased canopy closures and individual trees have grown larger. Some of these stands may now qualify as suitable goshawk nesting habitat. Increased fuel loads from fire suppression, as well as an increase of insect and disease activity, has increased the chance of stand-replacing fires that could remove several acres of older forest habitats from the landscape.

Foreseeable activities that might have the potential to affect goshawk within or adjacent to the analysis area include DRAMVU projects, as well as ongoing firewood gathering. Access restrictions associated with the reduction of cross country travel associated with the DRAMVU project would help in alleviating the loss of snags and logs taken by firewood gatherers.

Ongoing road/trail maintenance, grazing weed management and other recreational activities are not expected to affect the goshawk.

Alternatives 2, 3, and 4 – Action Alternatives

Proposed management activities may change the suitability of some of the area to northern goshawks by improving overall tree/stand health and by reducing some of the overstory canopy closure and availability of nesting and foraging resources. Action alternatives would add moderately to forest fragmentation levels in the project area, which would be cumulative to past, present, and other foreseeable harvest activities in these drainages. Harvest units or silvicultural treatments, particularly when juxtaposed against past harvest units, could create openings too large to be used by goshawks, thus decreasing the acres of suitable habitat.

The intent of this project is to recover some of the vegetative structural diversity lost by decades of fire suppression and retain pockets of dense canopied forests which could be used as nesting habitat, as well as reduce tree densities to simulate historic fire processes. Treatments are also intended to improve growing conditions for grasses, forbs, and shrubs, which would also improve habitat for prey species and maneuverability for foraging goshawks. Action alternatives would reduce fuels at relatively moderate levels, potentially contributing to less fire risks to old growth and late seral habitats.

Although individual birds could be disturbed by project activities, none of the proposed alternatives, nor the use of prescribed should affect subpopulation viability at the local or Forest level. Alternatives 2, 3, and 4 would add moderately to forest fragmentation levels in the project area, which would be cumulative to past, present, and other foreseeable harvest activities in these drainages.

There would be a short-term displacement/disturbance with the implementation of planned activities.

Conclusion

Based on Forest-wide monitoring completed in 2016, 2017, and 2018, the northern goshawk population trend on the Nez Perce Forest is stable or increasing (IBO 2016, IBO 2017, IBO 2018). Available data support the conclusion that local goshawk population trends are consistent with large-scale trends, including the North American Breeding Bird Survey results cited above. Overall goshawk populations continue to remain relatively healthy and stable or slightly increasing.

Based on the amount of habitat on the Nez Perce National Forest and in the Region (Samson 2006a, 2006b), habitat for the northern goshawk is abundant and well distributed on the Forest and within the Region. While individual birds or pairs could be temporarily disturbed by project activities at the local or watershed level, there is sufficient habitat to support viable populations of northern goshawks in the project area and Forest-wide in the long-term. At the Forest level and across the range of the species, the effects of past, present, and reasonably foreseeable future actions appear small to negligible. **While project activities may reduce some habitat that this species prefers, populations are not likely to be affected at the Forest level or across the range of the species.**

Pileated Woodpecker

The pileated woodpecker was selected as a Nez Perce Forest management indicator species to represent old forest and snag dependent species. The pileated woodpecker is a common year-round resident in Idaho coniferous forests and occupies habitats throughout the Nez Perce National Forest. Pileated woodpeckers are associated with mature and older forests for nesting but also younger forests that have scattered, large, dead trees for foraging (Bull and Jackson 1996). Pileated woodpeckers appear to seek out microhabitats with a higher diversity of tree species and higher densities of decadent trees and snags than are available across a landscape (Carpenter and Keating 1979, Savignac et al. 2000, Aubry and Raley 2002). Through their selection of large dead and damaged trees, pileated woodpeckers may serve as a good indicator of ecological function rather than just the age of a stand or forest (Bonar 2001).

Population trends were reviewed across a larger scale on January 2, 2015 from the USGS – Patuxent Wildlife Research Center's North American Breeding Bird Survey web site (Sauer et al. 2011 http://www.mbr-pwrc.usgs.gov/bbs/bbs.html). For the entire United States, the BBS data shows an upward trend in the pileated woodpecker population of 1.25% per year since 2002 (2002-2012) and survey-wide, an increase of 1.88% per year. In the United States for years 1966-2009, pileated woodpeckers are categorized as an "increasing species", based on significant trends.

The pileated woodpecker is rated secure across its range (global rank G5) and apparently secure (state rank S4) in the state of Idaho (NatureServe [accessed February 11, 2019]; [G5/S4] Idaho Fish and Wildlife Information System [accessed February 11, 2019]). Current BBS data show that populations of the pileated woodpecker are increasing nationally (Sauer et al. 2011). Idaho state data for this species are insufficient to allow statistical analysis of population trends (Sauer et al. 2011); however, based on Forest-level monitoring completed from 2016-2018 (IBO 2016, 2017, 2018) and habitat requirements and trends (Samson 2006a), local populations are likely stable or increasing. Habitats on the Nez Perce National Forest contribute to a viable population at a regional scale (Samson 2006b).

Affected Environment

Pileated woodpeckers were evident and documented in the project area during project field review.

There are about 1407 acres of nesting habitat with average tree size greater than 20 inches dbh and canopy cover >60% in mixed conifer habitat (ponderosa pine, Douglas-fir, grand fir, and western red cedar) (Bull et al. 1986). Foraging habitat (including nesting habitat) consisting of mixed conifer forest that are greater than 10 inches dbh and greater than 25% canopy cover are well represented (21,694 acres) within the 29,383-acre project area. Retention of large, seral tree species is an important component for maintaining habitat for this species in managed forests.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments would occur with this alternative and current vegetative processes would continue. In general, mature, high-canopied habitat would increase as forest succession continues to fill in understories and increase stand canopy closure. In predominantly mixed conifer stands, additional trees would die as a result of insect and disease activity, and dead trees would eventually fall to the ground. There would be no direct or indirect effects to pileated woodpeckers or their habitat.

Alternative 1 would lead to continued fuel loading in the long term and would eventually lead to higher intensity fires, which would jeopardize nesting areas due to stand-replacing fires.

Alternatives 2, 3, and 4 – Action Alternatives

Regeneration harvest and thinning can impact pileated woodpeckers by removing suitable nesting habitat and removing snags and down wood used for foraging. The proposed project design spreads potentially affected acres across most of the analysis area. As a result, most resident pileated woodpeckers would likely experience some habitat loss at a small or site-specific scale.

Treatments that include green and dead tree harvest to improve forest health and reduce the incidence of insects and disease would affect both nesting habitat and foraging habitat for pileated woodpeckers. The changes in habitat acres are outlined in Table 16 by alternative. Alternative 4 would modify the fewest acres of pileated woodpecker nesting habitat (about 17% of existing nesting habitat), and Alternative 2 and 3 would modify the greatest acreage (about 19%). The least amount of foraging habitat would be harvested with Alternative 4 (about 27% of foraging habitat), while Alternatives 2 and 3 would harvest about 30%.

Table 3-13. Summary of pileated woodpecker habitat available in the project area proposed for treatment by alternative and treatment type

Modeled Pileated Woodpecker Habitat	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Nesting Habitat (ac)				
Total in Project Area	1407	1407	1407	1407
Treated by Intermediate Harvest	0	103 (7%)	92 (7%)	103 (7%)
Treated by Regeneration Harvest	0	159 (11%)	171 (11%)	138 (10%)
Total Treated	0	263 (19%)	263 (19%)	241 (17%)
Foraging Habitat (ac)				
Total in Project Area	21694	21694	21694	21694
Treated by Intermediate Harvest	0	2300 (11%)	2111 (10%)	1844 (9%)
Treated by Regeneration Harvest	0	4257 (20%)	4338 (20%)	4104 (19%)
Total Treated	0	6557 (30%)	6449 (30%)	5948 (27%)
Pileated habitat also classified as MA20 Old Growth (ac)				
Total Treated	0	68	0	0

Most of the new harvest units are adjacent to previous harvest units creating extremely large forest openings over several hundred acres in size, which are devoid of standing snags and down wood.

Timber harvest has been shown to reduce reproductive success of pileated woodpeckers (Bull et. al 2007). Regeneration harvest would eliminate habitats from treated areas in both the short-term and long-term because snags used for nesting and foraging (and mature trees that could become snags) would be removed. The few remaining trees in each treatment unit would not provide substantial foraging or nesting opportunities.

Intermediate harvest types would also reduce the quality of nesting and foraging habitats because the amount of snags and down logs would be reduced in the short-term and because the number of trees available to die and become snags and logs in the long-term would also be reduced. Treated areas may retain some snags and down logs, providing a low-density source of foraging and potential nesting sites. Thinned stands could maintain or create more favorable conditions over time for pileateds as these stands develop structural diversity. Silvicultural practices that retain large (greater than 20 inches diameter at breast height) trees would maintain habitat and benefit pileated woodpeckers. By thinning the understory, smaller diameter trees, it is believed that habitat for pileated woodpeckers would be improved. Treatments are designed to reduce the dominance of smaller diameter trees within the understory and improve growing conditions to promote and sustain mature/late-seral forest structure. This would create the structural diversity of large diameter trees that this species prefers to nest in. The intent of this project is to recover some of the vegetative structural diversity lost by decades of fire suppression and retain pockets of dense canopied forests which could be used as nesting habitat, as well as reduce tree densities to simulate historic fire processes. Dense canopy stands in mixed conifer habitats would be reduced, but large diameter standing live and dead trees and down logs would be retain in treated stands. Stands with moderate canopy cover would still be considered as nesting habitat, especially if canopy cover remains above 50%.

The construction of temporary roads for harvest would temporarily eliminate available nesting and foraging habitat. However, these roads would be decommission and would be revegetated, but it would take decades for full revegetation of the roads.

Alternative 2 would harvest in MA20, while Alternatives 3 and 4 would not. The treated in MA20 is designed to remove the younger understory vegetation in the drier old growth habitats and reduce the competition and ladder fuels. Even though other mature or over-mature area may be harvested, large-diameter, oversized trees would be retained in harvest units to provide structural diversity. Sufficient habitat would remain unaffected by the proposed actions to continue to support pileated woodpeckers and the species they represent within the watershed and across the forest.

Proposed road/trail improvement activities, watershed improvement activities, riparian plantings, meadow restoration, and hand thinning around private land would not have an appreciable effect on pileated woodpeckers or their habitat.

Landscape burning activities could directly produce scattered dead trees, but most would likely be of smaller diameter and may be of limited value to this species.

The proposed permanent road into Trout Creek (Rd 9413 extension) is along a major ridgeline, which is used as major travel corridor by many wildlife species. The construction/addition of the Trout Creek route severs a large old growth patch, including MA20. This road would impair the integrity of the old growth patch.

Alternative 3 does not include any new permanent road construction only temporary roads which will be decommissioned. However, the effects of temporary roads along major ridge, wildlife travel corridor, and old growth patch would have the same impacts as under alternative 2. There will be a loss in vegetation with the construction of the road, but this would be temporary as the roads would be decommissioned after use. However, the loss of the overstory vegetation would take many decades to grow back and provide enough cover for animals to use the area.

Individual woodpeckers may be disturbed by project activities under the action alternatives (2, 3, and 4); however, this disturbance is not expected to measurably affect their survival or reproduction. Individuals would move away from areas of active treatment and would not be injured or killed. Sufficient habitats are available outside the treatment units to support the local population during project implementation.

Cumulative Effects

Geographic Boundary

The cumulative effects area for pileated woodpecker is the project area. This area was selected because the project area is large enough to assess the effects to pileated woodpeckers. The time frame for cumulative effects is 150 years which is the approximate amount of time required for stands to develop

into a mature or older vegetative state and snags to develop into a condition that provides habitat for old growth and snag dependent species.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities are described in detail in the EIS and have contributed to current habitat conditions. Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments. Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements.

Specifically, timber harvest has reduced the amount and continuity of mature and old growth habitat. In addition, past actions frequently targeted medium and large trees and valuable ponderosa pine and western larch snags. These actions have left fewer appropriate stands, and trees within stands, that could be used by pileated woodpeckers. Past harvest left few snags or legacy trees, and little down wood. As these older harvest units have begun to mature, they are devoid of the structures that could be utilized by pileated woodpeckers. At the same time, active fire suppression since the early 1900s has allowed succession to continue in those stands that have not been harvested. Relatively simple one- and two-story stands have transitioned to more complex multi-story stands with increased canopy closure, and individual trees have grown larger. Some of these stands may now qualify as suitable pileated habitat. Increased fuel loads from fire suppression increase the chance of stand-replacing fires which could remove several acres of older forest habitats from the landscape. Fires would create additional snags, but it would take many years before new forest would mature to levels where burnt stands could be used by pileated woodpeckers.

Past timber harvest activities have created a patchy landscape across the watershed which has likely resulted in larger home ranges than would be the case in unlogged habitats. Larger home ranges affect the energy reserves of animals as they must travel greater distances for their daily needs. Many past timber activities left few snags on the landscape that could be utilized for pileated woodpecker foraging, nesting, or drumming sites.

Fire suppression, prescribed fire, grazing, road/trail maintenance, noxious weed treatment, and recreation activities, would continue under all alternatives.

Foreseeable and ongoing activities that might have the potential to affect pileated woodpecker within or adjacent to the analysis area include the DRAMVU project, and ongoing firewood gathering. Access restrictions associated with the reduction of cross country travel associated with the DRAMVU project would help in alleviating the loss of snags and logs taken by firewood gatherers.

Ongoing road/trail maintenance, grazing weed management and other recreational activities are not expected to affect the pileated woodpecker.

Alternatives 2 and 3 – Action Alternatives

Proposed management activities may change the suitability of some of the area to pileated woodpeckers by improving overall tree/stand health and by reducing some of the overstory canopy closure and availability of snags as nesting and foraging resources. Action alternatives would add moderately to forest fragmentation levels in the project area, which would be cumulative to past, present, and other foreseeable harvest activities in these drainages. It would reduce fuels at relatively moderate levels, potentially contributing to less fire risks to old growth and late seral habitats. However, treatments are designed to reduce the dominance of smaller diameter trees within the understory and improve growing conditions to promote and sustain mature/late-seral forest structure. This would create the structural diversity of large diameter trees that this species prefers to nest in. The intent of this project is to recover some of the vegetative structural diversity lost by decades of fire suppression and retain pockets of dense canopied forests which could be used as nesting habitat, as well as reduce tree densities to simulate historic fire processes.

Action alternatives would add moderately to forest fragmentation levels in the project area, which would be cumulative to past, present, and other foreseeable harvest activities in these drainages. It would

reduce fuels at relatively moderate levels, potentially contributing to less fire risks to old growth and late seral habitats.

Although individual birds could be disturbed by project activities, none of the proposed alternatives, nor the use of prescribed fire that may occur adjacent to the project area, should affect subpopulation viability at the local or Forest level.

Conclusion

Based on the current level of insect and natural fire activity on the Nez Perce National Forest and in the Region (Samson 2006a, 2006b), habitat for the pileated woodpecker is abundant and well distributed on the Forest and within the Region. In addition, Forest-level monitoring completed in 2016, 2017, and 2018 indicated pileated woodpeckers are abundant within suitable habitat across the Forest (IBO 2016, IBO 2017, IBO 2018). Available data support the conclusion that local pileated woodpecker population trends, are consistent with larger scale analyses' conclusions including the North American Breeding Bird Survey Trend results cited in the specialist report.

While individual birds or pairs could be temporarily disturbed by project activities at the local or watershed level, there is sufficient habitat to support viable populations of pileated woodpeckers in the project area and Forest-wide in the long-term. At the Forest-level and across the range of the species, the effects of past, present, and reasonably foreseeable future actions appear small to negligible. **While project activities may reduce some of the habitat components pileated woodpecker prefers, populations are not likely to be affected at the Forest level or across the range of the species.**

American Marten

The American marten (also known as the pine marten) was selected as a Nez Perce Forest management indicator species to represent trapped species and high-elevation old-growth forests. Marten inhabit dense, moist to wet coniferous forests that support abundant vole populations (Buskirk and Ruggiero 1994). They prefer higher-elevation, mature subalpine fir/Engelmann spruce forests with large woody debris, and well-developed canopy cover (Kujala 1993). In summer, martens use riparian areas more intensively (Bull 1996). Marten avoid openings greater than 150 feet from cover. Existing project area openings do not inhibit use of the area by marten.

Marten need dense overstory (>40%) and sufficient understory cover for hiding and denning (Stone 2010). However, it is possible that marten may be more associated with complex vertical and horizontal woody structure than with forests of a particular age, species, or overstory requirement (Chapin et al. 1997). Rarely do marten use open, xeric coniferous forests and those that lack structure near the ground (Koehler et al. 1975, Buskirk and Ruggiero 1994). American marten are found at higher elevations and on mid-slopes during winter; in summer, martens use riparian areas more intensively (Bull 1996).

Marten use habitats similar to those used by fishers, but unlike fishers, they can hunt efficiently both in the subnivean layer (under snow) and on the surface of deep snowpacks (Aubry and Lewis 2003). In the central Rocky Mountains, large logs (>16 inches), large snags (>16 inches dbh), and live spruce and fir trees >8 inches dbh were important characteristics for marten den sites, and rock crevices and red squirrel middens were used along with logs and snags (Ruggiero et al. 1998).

American marten are apparently secure (G5/S5) in Idaho and across their range (NatureServe 2014 [accessed December 31, 2014]; [G4/S4] Idaho Fish and Wildlife Information System 2014 [accessed December 31, 2014]). Samson (2006b) showed that habitat on the Nez Perce National Forest is more than sufficient to contribute to a viable population of the marten at a regional scale. According to the 2018 Idaho Department of Fish and Game furbearer report, the statewide population trend over the last five years for marten is stable to increasing (Mosby 2018).

There have been extensive surveys for mustelids conducted across the Forest in recent years. DNA hair snare and live trapping across the Forest from 2004 through 2015 resulted in 155 of 1,365 genetic samples testing positive for marten. There have been hair snare surveys for mustelids conducted within the project area as part of these larger Forest-wide efforts. Ten hair snare sample locations fall within or adjacent to the project area in 2007 resulting in a single documented marten genetic sample. An additional 4 snare sample locations were established within the project area as part of survey efforts in

2013. None of the 2013 hair snares produced marten genetic samples. One incidental observation of marten tracks was recorded within the project area in 1991.

Affected Environment

Marten habitat is defined as mixed conifer forest (lodgepole pine, subalpine fir, Engelmann spruce) that are greater than 10” diameter and with greater than 40% canopy cover (Stone 2010). There are approximately 3464 acres of habitat for marten in the project area.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments or watershed improvements would occur with this alternative. No road construction would occur, nor would cover be reduced from harvest activities. Under this alternative there would be no activities or disturbances to alter movements or temporarily displace marten within the project area. As a result, there would be no effect on marten or their habitat.

Continued fire suppression activities would continue to result in a decline of the mosaic patterns of potential denning and foraging habitats that are critical to marten. The long-term impacts of continued fire suppression would lead to an increased likelihood of a stand-replacing fire, which would result in a loss of potential habitat.

Alternatives 2, 3, and 4 – Action Alternatives

The action alternatives would change habitat within the project area. Regeneration harvest treatments would reduce the quality of denning and foraging habitats because the amount of snags, down logs, and other components of structural diversity would be reduced. Depending on the size and shape of the openings in the regenerative type harvests, shelterwood and clearcut with reserves, martens may avoid using these areas if they are greater than 300 feet wide and exhibit less than 40% canopy cover.

Treatments that include underburning and light harvests, such as thinning and small patch openings, are not expected to result in considerable changes in canopy cover or create large openings with early seral vegetation which marten would avoid using.

Changes in habitat acres are listed in Table 3-15 by alternative.

Table 3-14. Summary of American marten habitat available in the project area proposed for treatment by alternative and treatment type

Modeled Marten Habitat	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Denning Habitat (ac)				
Total in Project Area	3464	3464	3464	3464
Treated by Intermediate Harvest	0	40 (1%)	43 (1%)	40 (1%)
Treated by Regeneration Harvest	0	979 (28%)	1018 (29%)	984 (28%)
Total Treated	0	1020 (29%)	1062 (31%)	1023 (30%)
Marten habitat also classified as MA20 Old Growth (ac)				
Total Treated	0	0	0	0

Most of the new harvest units are adjacent to previous harvest units creating large areas over several hundred acres in size that exhibit much fewer standing snags and down wood. This reduces the likelihood that marten will use those areas for denning, but may still use them for hunting. Marten are also less likely to use the openings created by harvest activities, due to the loss of canopy cover.

Marten could be subject to short-term disturbance effects under the action alternatives. Short-term indirect effects would be limited to displacement from noise associated with project activities if individuals

are within the area at the time of work. As mitigation, all current access closures would be maintained as part of the proposed project.

Proposed road/trail improvement activities, watershed improvement activities, riparian plantings, meadow restoration, and hand thinning around private land would not have an appreciable effect on marten or their habitat.

There would be a temporary increase in road miles through the construction of temporary roads under the action alternatives. These roads would be decommissioned after activities are completed in an area. There would also be a temporary reduction in cover with the loss of vegetation associated with constructing temporary roads. This reduction in vegetation would be of a short duration because these sites would be revegetated. Minor ridge top areas may be impacted in the short-term, but is not expected to create a barrier to wildlife emigration or immigration.

The proposed permanent road into American Creek (Rd 9413 extension) is along a major ridgeline, which is used as major travel corridor by many wildlife species. The construction/addition of the Trout Creek route severs a large old growth patch, including MA20. Building these new roads would fragment the travel corridor and could disrupt movement patterns of marten.

Alternative 3 does not include any new permanent road construction only temporary roads which will be decommissioned. However, the effects of temporary roads along major ridge, wildlife travel corridor, and old growth patch would have the same impacts as under alternative 2. There will be a loss in vegetation with the construction of the road, but this would be temporary as the roads would be decommissioned after use. However, the loss of the overstory vegetation would take many decades to grow back and provide enough cover for animals to use the area.

There may be minor impacts to habitat from landscape burning activities as individuals or clumps of trees may be torched, therefore opening the canopy and creating a mosaic landscape.

Road decommissioning activities would not increase the amount of security as these roads are already closed yearlong.

None of the action alternatives would harvest trees in RHCAs. Connectivity along riparian habitat corridors would remain intact under the action alternatives. Additionally, it is common for up to 30% of the proposed acreage to be treated within units to be dropped from consideration in the layout process due to unmapped intermittent streams and other areas which would prohibit harvest. As with the no action alternative, trees killed by insects and other successional processes and not cut for firewood would fall to the ground and into streams enhancing structural diversity in these areas.

Cumulative Effects

Geographic Boundary

The cumulative effects analysis area for marten is the two subwatersheds that encompass the project area: Mill Creek and Lower Johns Creek. This area was selected based on average marten home range size: 6,700 acres for males and 3,500 acres for females (Bull and Heater 2001). The time frame for cumulative effects is 150 years which is the approximate amount of time required for stands to develop into a mature or older vegetative state and snags to develop into a condition that provides habitat for old growth and snag dependent species.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities are described in detail in the EIS and contribute to current habitat conditions. Ongoing actions within the cumulative effects analysis area consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments. Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements.

Past insect outbreaks, fires, fire suppression, and timber harvest have left a mosaic of habitats on the landscape, but they are not characteristic of the patterns that occurred historically under a more natural

disturbance regime. Fire suppression has created stands that are more homogeneous and contain more mid-sized conifers. Timber harvest has punctured this homogeneous landscape with fairly large uniform clearcuts from the 1960s through the 1970s, and smaller and uniformly shaped openings (less than 40 acres in size) in more recent years. These old units contain little, live or dead standing material and even less down woody debris. Even though they add diversity to a landscape, they tend to not be characteristic of the patterns that occurred historically under a more natural disturbance regime.

Past activities may have altered the availability of denning habitat, forested connectivity, and prey habitat for marten. The loss of medium and large trees from timber harvest has reduced the older forest component that is important to marten year-round. Across the project area, open roads facilitate access for trappers and firewood cutters, potentially decreasing marten populations and the downed logs important for marten and their prey species. Road construction has fragmented and degraded riparian areas that provide important travel corridors.

Foreseeable activities that might have the potential to affect marten within or adjacent to the project area include the DRAMVU project, as well as ongoing recreation and firewood gathering. Access restrictions associated with the reduction of cross country travel associated with the DRAMVU project would help in alleviating the loss of snags and logs taken by firewood gatherers and improve wildlife security.

Ongoing road/trail maintenance, grazing weed management and other recreational activities are not expected to affect the marten.

Alternatives 2, 3, and 4 – Action Alternatives

Alternatives 2, 3, and 4 would add moderately to forest fragmentation disturbance levels in the project area, which would be cumulative to past, present, and other foreseeable harvest activities in these drainages. It would reduce fuels at relatively moderate levels, potentially contributing to less fire risks to old growth and late seral habitats. Across the project area, open roads to motorized vehicles facilitate access for trappers and firewood cutters, potentially decreasing marten populations and the downed logs important for marten and their prey species.

There would be a short-term displacement/disturbance with the implementation of activities. There would be a slight improvement in security with road decommissioning.

Table 3-15. Summary of American marten habitat available in the Mill Creek and Lower Johns Creek subwatersheds by alternative and treatment type

Modeled Marten Habitat	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Denning Habitat (ac)				
Total in Subwatersheds	5,581	5,581	5,581	5,581
Treated by Intermediate Harvest	0	40 (1%)	43 (1%)	40 (1%)
Treated by Regeneration Harvest	0	979 (18%)	1018 (18%)	984 (18%)
Total Treated	0	1020 (18%)	1062 (19%)	1023 (18%)
Marten habitat also classified as MA20 Old Growth (ac)				
Total Treated	0	0	0	0

Conclusion

Marten habitat is well distributed across the Northern Region and Nez Perce National Forest. Based on monitoring results and widely scattered incidental sightings, local marten population trends remain relatively stable on the Forest. While regeneration harvest would create openings marten may avoid in up to 31% of currently available habitat in the project area, habitat would remain available in untreated mature forest stands and riparian areas. Woody debris would continue to accumulate and be created as trees age and die. At the Forest level and across the range of the species, the effects of past, present, and reasonably foreseeable future actions would be small to negligible. **While project activities would**

reduce the availability of habitat this species prefers within the project area, populations are not likely to be adversely affected at the Forest level or across the range of the species.

4.4 Neotropical and Other Migratory Birds

Forest landbirds include all the avian species, sometimes collectively termed 'neotropical migratory birds' and 'resident songbirds.' This group of birds is not treated separately by species, because they are an extremely diverse group of species, with widely disparate habitat requirements.

In 1988, an amendment to the "Fish and Wildlife Conservation Act" required the U.S. Fish and Wildlife Service to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973." To carry out this mandate, the U.S. Fish and Wildlife Service published "Birds of Conservation Concern 2002", which recommends that its lists be consulted in accordance with E.O. 13186. Executive Order (E.O.) 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds" (January 10, 2001) pertains to conservation of migratory birds. In addition, numerous birds are listed as Species of Greatest Conservation Need by the Idaho Department of Fish and Game. Currently, there are no Nez Perce Forest Plan standards specific to migratory birds.

The Migratory Bird Treaty Act protects all migratory ground-nesting and shrub-nesting birds. Neotropical migrants use coniferous forest habitats in the U.S during the summer breeding season but migrate to southern latitudes to spend winters in habitats as far south as Mexico, and South America. Tropical deforestation and other environmental effects related to bird wintering grounds are thought largely responsible for declines of some neotropical migrant bird populations.

Affected Environment

There are approximately 243 bird species breeding in Idaho, and about 119 of those species are neotropical migrants (Idaho Partners in Flight 2000). In their Idaho Bird Conservation Plan (2000), Idaho Partners in Flight identified several high priority species that use lodgepole pine and mid to high elevation mixed conifer habitats (three-toed woodpeckers, olive-sided flycatcher, Hammond's flycatcher, ruffed grouse, black-backed woodpeckers, and varied thrush), and low elevation mixed conifer forests (flammulated owl, dusky flycatcher, western tanager, brown creeper, Williamson's sapsucker, northern goshawk, and sharp-shinned hawk).

The Nez Perce NF provides breeding habitat for dozens of migratory bird species. This extremely diverse group occupies all types of habitat in the vicinity of the project area including streams, wetlands, riparian areas, grass/forb meadows, shrub lands, deciduous forest, coniferous forest, mixed forest and rock outcrops. Within the project area, forested habitats provide trees, shrubs, snags, and surface vegetation for nesting birds. Riparian areas support a high diversity of migratory bird species. Forage is abundant in the project area with birds, small mammals, and insects providing prey for a number of species. Seeds, berries and other vegetative food sources are also abundant.

Snags are an important habitat component for migratory songbirds and are used for nesting, roosting, and foraging by a number of migratory bird species (Bull et al 1997, Hutto et al. 1992). Coarse woody debris also provides foraging substrates, perches, and cover for migratory birds.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments would occur with this alternative and current vegetative processes would continue. This alternative would have no direct or indirect effects on migratory birds.

A range of fire severity, from non-lethal to stand replacing crown fires, historically played a role in developing the vegetative characteristics in the project area. Although the type and frequency of fire varies within a given area and vegetation type (based on biophysical setting), with some being more prone to infrequent stand replacing fire, the vegetation types within the project area have historically experienced low and/or mixed severity fires at least periodically. These natural disturbance regimes favor fire tolerant species, including older and larger diameter seral tree species such as western larch, western

white pine, and ponderosa pine. The exclusion of low to moderate severity fires through fire suppression has altered the amount of shade-tolerant species in the understory of these forested stands as well as increased fuel loadings in the form of ladder fuels and downed woody materials. Fewer fires have also reduced the amount of natural openings, structural diversity, and the number/size of patches across the landscape. Due to the denser fuel conditions, resulting stand replacing fires in these stands often kill many of the overstory trees which historically survived mixed-severity wildfires. Past vegetation management practices that targeted old, large trees removed the relic seral species and further altered tree size and composition; this in turn has promoted the development of climax species and conditions. In general, the resultant stand patch sizes and occurrence, species composition, stand structure, and fire frequency and severity are departing from desired vegetative conditions based on historic range of variability within the project area. See the Fuels Management and Forest Vegetation sections for more detail.

The probability of stand-replacing wildfire would increase especially in areas with heavy fuel loads and in adjacent stands. Live vegetation that provides cover, foraging, and nesting habitat could be reduced across the project area. Post fire, there would be an initial shift in species composition to early successional communities and a potential increase in non-native species. Within time, there would be a gradual return of species adapted to mid-seral, mature, and late successional forests. As succession continues, large woody debris would be expected to fall into streams and riparian areas and stream shading should increase.

Alternatives 2, 3, and 4 – Action Alternatives

A 2002 review of past literature regarding bird-forestry relationships in managed forests across North America concluded, “The response of birds to forestry practices has been mixed and highly species-specific, but in general, net change in community richness following timber harvest was negligible” (Sallabanks and Arnett 2002).

Species that are dependent on fire-climax ponderosa pine/Douglas-fir communities would be favored by harvest activities and burning treatments by restoring and maintaining fire-climax ponderosa pine communities. Some loss of habitat would occur with the opening of the overstory canopy for those species that use denser forested areas. A reduction of core habitat may reduce nesting habitat. A potential increase in predation and nest parasitism could potentially result over time depending on the amount the overstory canopy is opened by commercial thinning practices. All action alternatives would reduce forest canopies and add some degree of fragmentation and edge habitats due to shelterwood, patch cuts, and clearcut with reserves.

Species that are dependent on fire-climax ponderosa pine communities would be favored by harvest activities. Action alternatives treat low elevation ponderosa pine/Douglas-fir communities, which would further improve habitat for those species that use those areas. These alternatives would also have a greater impact in reestablishing the variable patterns that once occurred in the area with periodic burns.

Regeneration harvest would reduce core habitat for species that exclusively use densely forested areas. A reduction of core habitat may reduce nesting habitat. A potential increase in predation and nest parasitism could potentially result over time depending on the amount the overstory canopy is opened. All action alternatives would reduce forest canopies and add some degree of fragmentation and edge habitats.

The planned actions would create patches of new forest that would favor habitats for bird species associated with early forest succession and edge habitats. By leaving large, windfirm live trees and snags, pockets of down wood, and planting trees, additional feeding and nesting habitats for songbirds could be created. By reducing fuel loads and creating openings across the landscape, the risk of stand-replacing fire would be reduced locally.

The retention of large trees within treatment and/or forested riparian habitats would provide habitat for species (woodpeckers, flycatchers, soaring raptors, and owls) associated with standing trees (for foraging/hunting, nesting and perching). Patches of middle-aged and mature forest would provide for species associated with dense forest canopies for forest hawks.

Neotropical migratory birds may be temporarily displaced from the area due to equipment noise, loss of habitat, and/or human presence in the area. Proposed management activities may disturb individuals or local populations of neotropical migrants if these projects occur during the breeding season (April through June), thus reducing reproductive success. Harvest and burning activities that occur during the nesting period would increase the likelihood of direct mortality to nestlings and could disturb mating and nesting behaviors.

The construction of temporary roads for harvest would temporarily eliminate available nesting and foraging habitat. However, these roads are primarily associated with harvest units and would be decommission and revegetated following harvest activities.

Proposed road/trail improvement activities, watershed improvement activities, and hand thinning around private land would not have an appreciable effect on neotropical migrants or their habitat.

Riparian plantings and meadow restoration could improve habitat for riparian associated species. Planting shrubs along the Mill Creek would improve understory habitat conditions and may provide potential nesting sites once the shrubs reach a desirable stage to nest in. By slashing smaller diameter trees and piling the slash or by increasing the amount of moist meadow grasses and sedges, nesting sites may also be created. On the other hand, nesting sites may also be reduced with removing the smaller diameter trees in the meadows. In the long run, habitat conditions in the meadows would be improved by restoring the sites to a more properly functioning condition.

No timber harvest is planned in RHCAs, so these habitats would remain available to birds. Similarly, seeps, springs, and wet areas would be buffered with no timber harvest, leaving these areas intact for songbirds. Existing habitat would remain for those species that prefer mature forests in untreated areas in the project area.

Cumulative Effects

Geographic Boundary

The cumulative effects analysis area for migratory birds is the Hungry Ridge project area. The timeframe for cumulative effects is approximately 10 years in the short-term which is about the time it takes for new plantations to restore vegetative conditions conducive to bird species that prefer early successional stages. The long-term timeframe is 100-150 years which the approximate amount of time required for stands to develop into a mature or older vegetative state and snags to develop into a condition that provides habitat for old growth and snag dependent species.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities and effects of such activities are described in detail in the EA and contribute to current habitat conditions. Ongoing road/trail maintenance, grazing weed management and other recreational activities are not expected to affect neotropical migratory birds.

The most important cumulative effects to Neotropical migrants have been associated with fire suppression at the landscape scale. Timber harvest and mining have had substantial negative effects at the stand and subwatershed scales.

Timber harvest with its fragmentation and the lack of fire on the landscape has resulted in a change in the habitat for some Neotropical migrants. Some habitats would be lost as a result of timber harvest and fuels treatments for species using denser forested canopies. Continued fire suppression would allow succession to continue and increase the amount of mature timber in the area. However, continued fire suppression would also increase the fuel build-up in the area, thereby increasing the eventual likelihood of a large-scale wildfire, which could result in a loss of the habitat for many Neotropical migrant birds.

Access restrictions associated with the reduction of cross country travel associated with the DRAMVU project would help in alleviating the loss of snags and logs taken by firewood gatherers.

Alternatives 2 and 3 – Action Alternatives

Action alternatives, in combination with past, present, and reasonably foreseeable Federal projects would cumulatively add some fragmentation effects to the forested landscape but the net impacts to bird species

would be relatively minor, given historical impacts of fire regimes, overall insect-driven disturbance, and tree death throughout the analysis area. Woodpecker populations and secondary cavity-nesters in particular are likely to be affected by the removal of dead and dying trees and fuel reduction projects. In addition, foraging habitat may be increased for those species that prefer more open canopied forests or early-seral forest conditions. Harvests that occur during the nesting period would increase the likelihood of direct mortality to nestlings and could disturb mating and nesting behaviors.

Focusing on restoring seral species (ponderosa pine, larch) components and increasing the development of large overstory trees would benefit most Neotropical migrants. Managing riparian areas separately from upland habitat by implementing PACFISH buffers benefit species dependent on interior habitat with dense forest canopies. Maintaining a variety of successional stages and snags in various states of decay and sizes would also help maintain existing populations of Neotropical migrants.

Conclusion

At the project and watershed level, effects of the proposed project may temporarily affect individual migratory birds. At the Forest level and across the range of these species, effects would be small to negligible. Design measures are included to reduce the impacts to reproductive activities. Based on the above information, Neotropical bird habitat would be maintained and even improved for many species, and therefore local populations within the planning area and across the Forest would be maintained. This project would meet regulations pertaining Neotropical migratory birds.

4.5 Old Growth Forest Habitats

This section describes the existing conditions for the project area and assesses the potential effects of the proposed project on Management Area 20 (MA20) and other old growth forest habitats.

MA20 are those areas that are to be managed as old growth habitat for old growth dependent species (FP pg III-4, III-56, and III-57).

Old growth forest habitats are those areas that are managed to provide old growth habitats in accordance with Appendix N of the Forest Plan. These areas identified as old growth may be contained within Management Area 20 or within other management areas. The intent is to maintain at least ten percent of the forested acres in each prescription watershed or combination of watersheds (old growth analysis units-OGAAs) as old growth habitat. The amount and distribution of old growth is verified as part of project planning efforts.

As part of the planning process, the quantity, quality, and distribution of Management Area 20 (MA20) and other old growth habitat were verified in the project area. MA20 are those areas that are to be managed as old growth habitat for old growth-dependent wildlife species (USDA-FS 1987a, pg. III-4, III-56, and III-57). Current Forest Plan direction is to maintain at least ten percent of the forested acres in each prescription watershed or combination of watersheds (old growth analysis areas, OGAAs) as old growth habitat (USDA-FS, 1987a, Appendix N). The areas identified as old growth may be contained within MA20 or within other management areas. Potential impacts to lands meeting the North Idaho old growth (NIOG) definition (Green et al. 1992) were included as best available science. Potential impacts to lands meeting the Forest plan old growth (FPOG) definition were included to comply with Forest Plan direction.

Affected Environment

Forest Plan Management Area 20

Validation of Forest Plan management areas (MA), including MA20 (manage for old growth habitat for dependent species), was accomplished using aerial photos, stand exam information, previous land uses, and personal knowledge of stand conditions. The interdisciplinary team followed direction provided in the Forest Plan for validating management areas. At the end of the management area validation process, there are approximately 2,478 acres of MA20 (old growth) associated with the project. Patches of MA20 are concentrated in Big Canyon, Mill, American, Deer, Marble, Merton, Trout, Black George, and Corral Creeks (Figure 1).

Old Growth Habitats

The most recent Forest Inventory and Analysis (FIA) data (Bush et al. 2010) indicate that approximately 13 percent of the Nez Perce National Forest meets the definition of “north Idaho old growth” (90 percent confidence interval: 10.4 - 15.6 percent) based on the Green et al. 1992 definitions (minimum of 8 trees per acre greater than 21 inches dbh, minimum of 40 square feet basal area per acre, and at least 150 years old). Approximately 13.6 percent of the Nez Perce National Forest meets the Forest Plan definition of old growth (minimum of 15 trees per acre greater than 21 inches dbh) (90 percent confidence interval: 14.4 - 20.2 percent). Based on this information, the Nez Perce National Forest is above the Forest Plan minimum standard of 10 percent old growth forest-wide.

In addition to management area validation, stands that have current stand exam data were reviewed to determine where other patches of old growth may exist that meet forest plan old growth (FPOG), North Idaho old growth (NIOG), and replacement old growth (will meet the definition of FPOG within 100 years) definitions. Where stand exams were not preformed, vegetation databases, aerial photos, field observations, harvest history, and fire history were reviewed to locate additional replacement old growth stands. Approximately 1,140 acres meet the FPOG definition, 981 acres meet the NIOG definitions, 765 meet both definitions, and 4,444 meet the definition of replacement old growth within the project area.

Please note, some stands labeled as MA20 are not labeled as FPOG or NIOG. Not all areas have stand exams and, as stated above, the validation process relies on additional information other than stand exams to allocate management areas within each capability area. This fact does not indicate stands labeled as MA20 alone are not old growth. Those stands simply lack stand exam data and cannot appear in the query performed to locate NIOG and FPOG.

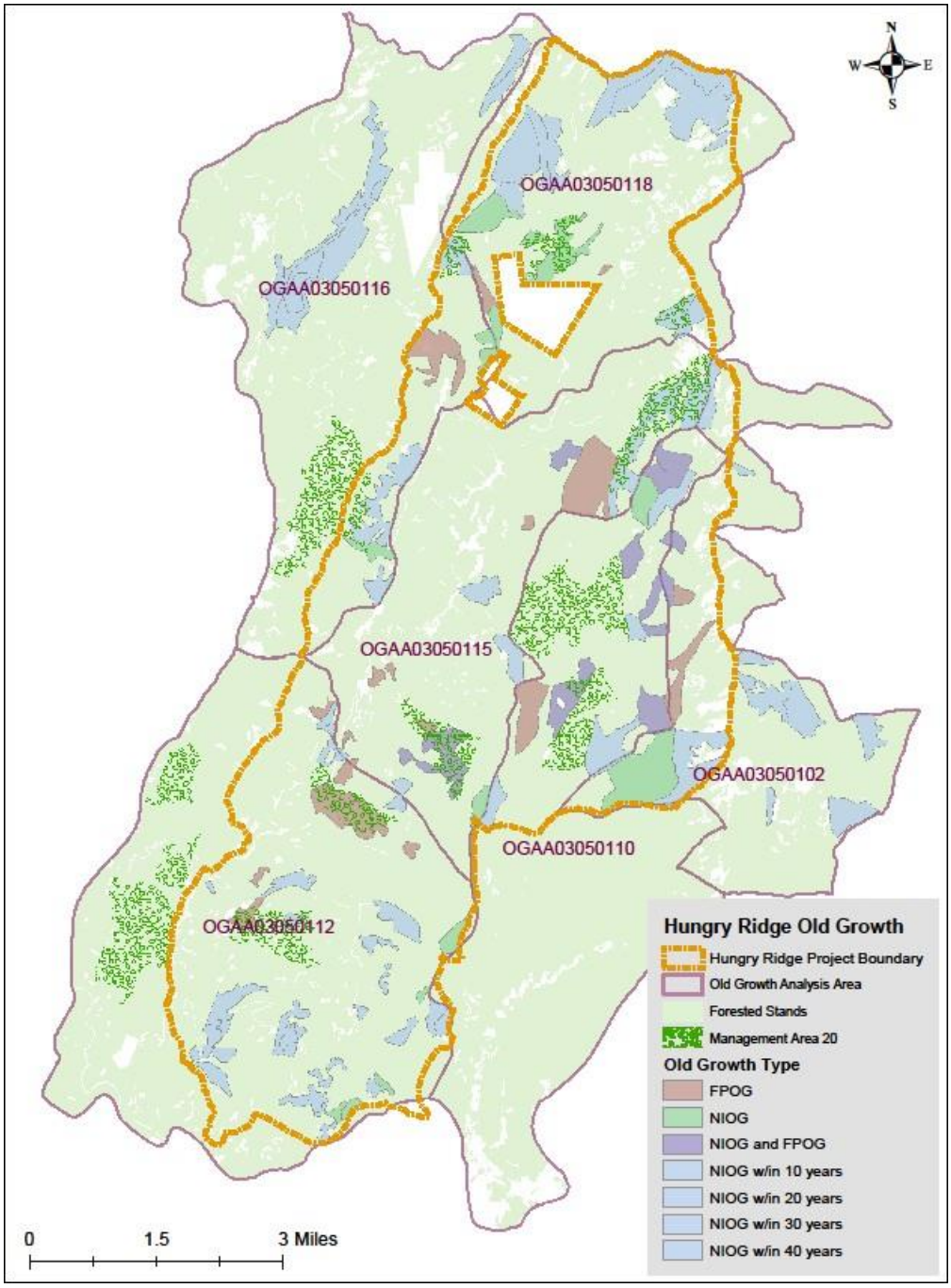

Figure 3-1. Old Growth Analysis Areas, MA20, NIOG, FPOG, replacement old growth, and the Hungry Ridge project area

Table 3-17 shows the amount of old growth habitat by old growth analysis areas (OGAA) associated with the Hungry Ridge project.

The majority of the identified old growth and replacement old growth habitats are mixed xeric and mixed mesic conifer forest types. The objective was to identify old growth for long-term habitat management, therefore lodgepole pine dominated stands were not considered for old growth habitat.

Table 3-16. Acres of Management Area 20 (MA20), Forest Plan old growth (FPOG), and North Idaho old growth (NIOG) by old growth analysis area (OGAA)

Old Growth Analysis Area (OGAA)	03050102	03050110	03050112	03050115	03050116	03050118
OGAA total size (NFS lands only)	6519	9981	13028	7282	10303	6779
OGAA forested acres	6008	9397	12535	6911	9661	6302
FPOG	127	145	325	338	165	40
NIOG	322	78	116	40	94	331
NIOG/FPOG[1]	53	492	0	220	0	0
MA20	5	905	1310	671	670	259
Acres of FPOG, NIOG, & FPOG/ NIOG that overlap with MA20	0	31	198	158	7	107
Existing OG[2]	507	1589	1553	1111	922	523
% existing OG per OGAA	8%	17%	12%	16%	10%	8%
Replacement OG[3,4]	745	315	805	473	1002	1104
Acres of replacement OG that overlap with MA20	5	1	21	246	50	72
Total OG in OGAA	1247	1903	2337	1338	1874	1555
Total % OG per OGAA	**21%[4]**	**20%**	**19%**	**19%**	**19%**	**25%[4]**

[1]Stands that meet both NIOG and FPOG definitions.
[2]Sum of MA20, Forest plan old growth, North Idaho old growth, and stands that meet both NIOG and FPOG definitions, minus overlap with MA20.
[3]Sum of stands between 110-149 years old.
[4]There are additional immature forest habitats that do not have stand exams that could qualify as replacement old growth.

Ponderosa pine forests of the western United States have historically been heavily influenced by frequent low intensity fire. This tree species has evolved to depend on periodic fire for maintenance and renewal of the ponderosa pine dominated plant communities. Ponderosa pine has thick bark and insulated buds which help larger trees resist fire. It also has highly flammable litter which propagates fire readily, eliminating later seral species in the understory and curtailing the development of ladder fuels which could carry a more lethal fire. This is one form of fire dependency. The open park-like structure associated with most mature ponderosa pine forests can be directly attributed to frequent underburning by fire (Harrington and Sackett 1992). This structure is typical of most pre-suppression old growth ponderosa pine stands inhabiting the dry, low elevation sites like the South Fork Clearwater River breaklands.

The greatest changes in vegetative conditions are associated with late successional, dry forest communities. Fire suppression and timber harvest have influenced patch size, species mix, and structural conditions. As a result of fire suppression, the biggest threat to the old growth stands in the Hungry Ridge Project Area is the increased risk of stand replacing fire due to the ingrowth of shade tolerant trees, and accumulations of ground and ladder fuels. Fuel levels are high because of accumulations of debris, and the implications of this increase are most serious in the lower elevation dry forest communities because these areas are outside their frequent fire cycle. Fire, which once helped perpetuate the old, open ponderosa pine forests, is now a vehicle for replacing those stands.

Health conditions vary among the old growth stands. As trees get old they become more susceptible to insect and disease attack, and other environmental stresses. This can be exacerbated by overstocking because resources become less available for production of defense compounds, making old trees even more susceptible to insect and disease attacks. Vegetative species conversion is changing old growth forest structure. The characteristic single-story old growth ponderosa pine stands are becoming multi- storied stands, producing a much shadier understory. These conditions prevent the regeneration of ponderosa pine and other early-seral species needed to replace this type of old growth as it dies. Structural and species changes not only change the aesthetics of the stand, but also change the ecology, and can significantly affect wildlife habitat. In some instances the over-mature mesic conifer stands are falling apart as root diseases are creating openings as the young and older grand fir die and fall over.

The popular notion of "hands off" management is not ecologically sound in xeric forest types, and will result in long-term loss of the older ponderosa pine and western larch late-seral forest conditions that have occupied this area for centuries and are important and desirable to keep. A number of studies have suggested that ponderosa pine forests cannot be retained without underburning. This also pertains to ponderosa pine old growth. Losses are occurring through conversion of the forest type as described above, and the stresses that result from increases in stocking levels and the associated competition for resources (Arno et al. 1997; Harrington 1996:41; Habeck 1990:271-292; Covington et al. 1992; Steele et al. 1986:16-18; Arno et al. 1997; Harrington and Sackett 1992).

After the advent of effective fire suppression techniques during the early 1900's, many of the ponderosa pine forests began to change. Suppression activities have effectively altered the natural fire regime of this ecosystem. Without fire, shrubs and small trees become established and create a second canopy layer not typically found in fire-maintained stands. As these seedlings matured, they provided ladder fuels into the upper canopy. Once these ladder fuels were in place, they created a situation where a regime of low intensity frequent fire could be supplanted by less frequent, but more severe fires resulting in extensive ponderosa pine mortality. Fires that once helped perpetuate the ponderosa pine forests now became a vehicle for replacing those stands.

Fire maintained essentially pure ponderosa pine stands and mixed stands of ponderosa pine and Douglas-fir at the lower elevations. Fire exclusion has changed the mixed conifer stands that were once dominated by ponderosa pine and western larch in the mid elevations. These stands are now susceptible to crown fire and the loss of many large old ponderosa pine and western larch due to high tree densities and high inter-tree competition. Inter-tree competition results in low crown ratios, and smaller diameters. High tree densities and subsequent mortality can lead to high natural fuel buildups.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

Alternative 1 would not affect MA20 or other old growth forest habitats because no vegetation treatments would be conducted. Old growth habitats may have a higher risk of loss to large-scale wildland fires in the absence of treatment due to ingrowth of trees, high fuel loads in the understory, and the amount of insects and disease in the project area.

Should wildfires occur in the low elevation ponderosa pine/Douglas-fir forests, long term losses of old growth will result from mortality attributed to increased fire intensity from large amounts of fuels found in the area. Potential for crown fires is high as a result of ladder fuels. Increased ground fuels result in smoldering, slow moving fires that increase ground temperatures, and fine root damage and cambium injury can occur. Fires of this nature can kill trees outright or increase stress levels in the tree, which result in mortality indirectly through reduced resistance to insect attack and pathogens. Present stress caused by overstocking and recent insect attack may have already weakened trees to make them less resistant to the injuries incurred from wildfire. As a result, direct and indirect losses of old growth due to wildfire would likely be high with this alternative.

As fuels increase, particularly those that create a ladder between the ground and live tree canopies, the risk of a lethal crown fire increases. A wildfire would leave behind greater numbers of snags than exist now and would also revert the area to young forest conditions. With increasing fuels due to succession, fire suppression, and insect and disease activity, old growth habitats in the area are at risk of

experiencing stand replacing fire, thus reducing the amount of late-seral, old growth habitat. Loss of snags and down logs to public firewood cutting would continue along open roads in these habitats.

Alternatives 2, 3 and 4 – Action Alternative

Alternative 2 would harvest approximately 68 acres of MA20, thus requiring a site-specific Forest Plan amendment. Approximately 59 acres of MA20 would be treated with an intermediate prescription harvest and approximately 9 acres would be treated with a shelterwood harvest (Table 3-18). Slash generated by logging would be burned where deemed necessary by fuel specialists.

The Big Canyon and American Creek MA20 patches are in need of treatment, as the old, ponderosa pine trees are stressed and in competition with younger trees. The intent of the treatment in these areas is to restore the open-canopied old growth ponderosa pine/Douglas-fir fire-climax habitats that once occurred as a result of frequent, low intensity burns. Treatments would open the canopy, retaining the large diameter tree species (ponderosa pine and Douglas-fir and larger grand fir). Younger and more shade-tolerant conifers would be removed (younger Douglas-fir and grand fir). Timber harvest and prescribed burning would reduce tree densities, ladder fuels, and competition for moisture and sunlight. The desired condition is to maintain a mature forest of somewhat open overstory between 30 and 70 percent crown cover. An average of 35-110 large trees per acre >20" dbh is desirable. The younger competing Douglas-fir and grand fir would be thinned from the understory to reduce ladder fuels and decrease the chance of stand replacing wildfires, yet retain habitat for old growth and snag dependent species. This would result in a wider spacing, allowing ponderosa pine to dominate the landscape again and lower the risk of stand replacing wildfires. The treatment of these dense, over-stocked stands would help retain and maintain habitat for many wildlife species that are dependent on the long-term sustainability of these ponderosa pine communities and old growth habitats.

No harvest would occur in MA20 under Alternatives 3 and 4. The effects to MA20 would be the same as under Alternative 1. With the lack of treatment in MA20 consisting of late-seral, dry forest communities, the risk of losing those areas to fire is high. Treating outside MA20, would reduce the risk of a severe wildfire in MA20 patches lower than Alternative 1.

All action alternatives would also treat other stands containing old growth attributes. Table 3-18 includes the acreage overlap between old growth habitats and treatment by alternative and prescription type. Figure 3-2 displays the location of old growth habitats, treatment units by treatment type, and road construction proposed in Alternative 2, which includes treatment of MA20.

Table 3-17. Proposed Harvest of MA20 and other types of old growth by treatment type and Alternative (Alt.)

	Treatment Type	MA20	FPOG	NIOG	NIOG/FPOG	Total
Alt. 1	Intermediate Harvest	0	0	0	0	0
	Shelter Wood	0	0	0	0	0
	Seed Tree	0	0	0	0	0
	Clear Cut with Reserves	0	0	0	0	0
	Alt. 1 Total	**0**	**0**	**0**	**0**	**0**
Alt. 2	Intermediate Harvest	59	23	57	0	139
	Shelter Wood	9	69	33	0	111
	Seed Tree	0	30	0	0	30
	Clear Cut with Reserves	0	166	130	93	389
	Alt. 2 Total	**68**	**288**	**220**	**93**	**669**
Alt. 3	Intermediate Harvest	0	34	28	0	62
	Shelter Wood	0	254	66	93	413
	Seed Tree	0	0	0	0	0
	Clear Cut with Reserves	0	0	86	0	86

	Alt. 3 Total	**0**	**288**	**180**	**93**	**561**
Alt. 4	Intermediate Harvest	0	36	28	0	64
	Shelter Wood	0	69	71	0	140
	Seed Tree	0	30	0	0	30
	Clear Cut with Reserves	0	211	81	126	418
	Alt. 4 Total	**0**	**346**	**180**	**126**	**652**

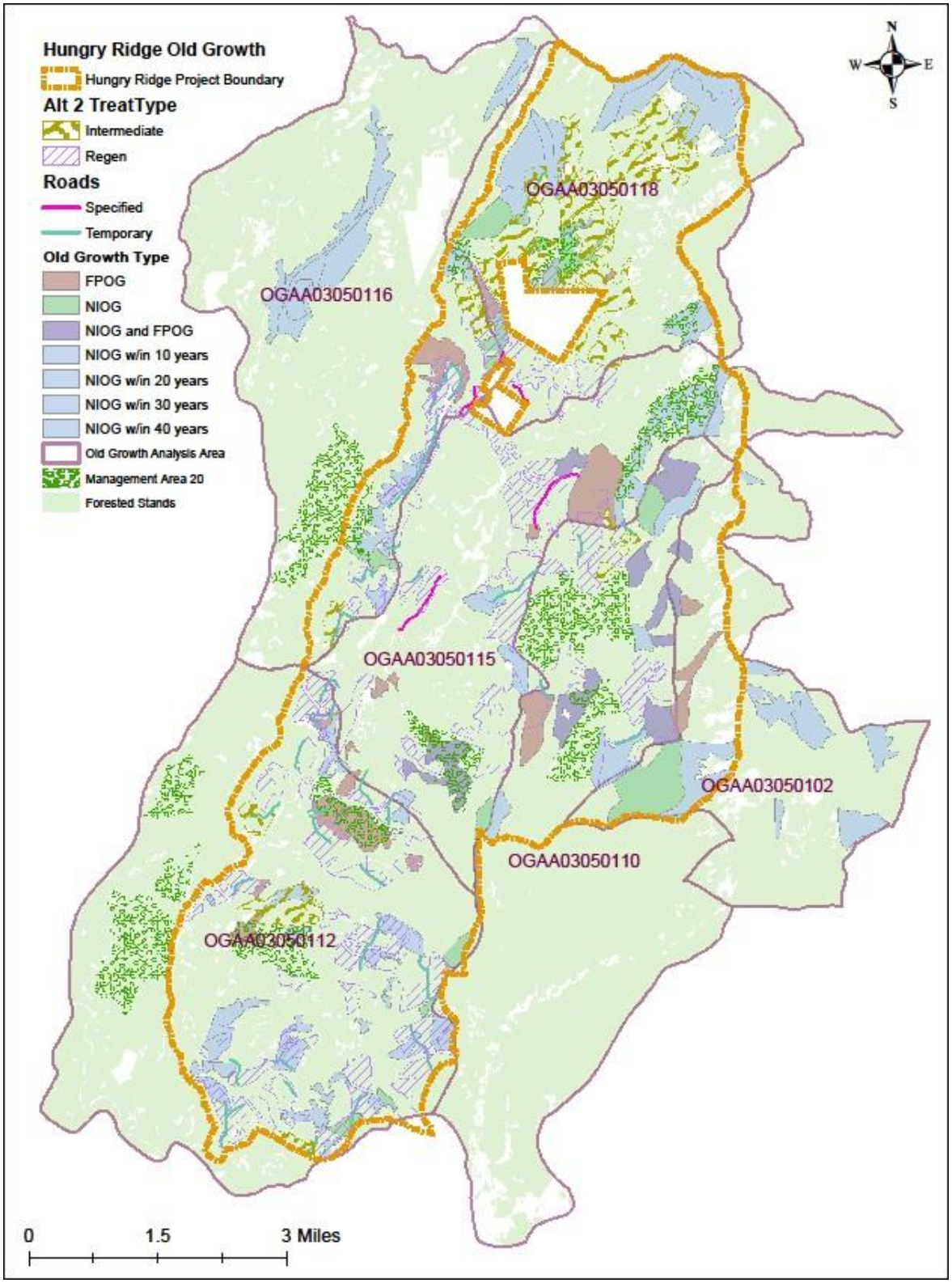

Figure 3-2. Location and type of treatment proposed in MA20 and other types of old growth

Several regeneration and commercial thin units are immediately adjacent to the Mill Creek old growth patch. This would further fragment this old growth patch and create an early-seral vegetative condition along the entire west side of this old growth block as many of these late-seral stands would be treated with a regeneration harvest type. Stands that have old growth characteristics that are identified to be treated with a clear cut or seed tree prescription would not retain the required amount of large diameter trees to meet old growth definitions; therefore, old growth would be lost in these areas.

Adverse effects to stands with old growth characteristics would be avoided as follows: larger trees, as well as large snags (15 inches or larger), would be targeted for retention to the maximum extent possible. Smaller live trees and other ladder fuels would be targeted for removal. Forest Plan direction related to retention of large woody debris would also be met.

Each prescription requires that a specific range of trees per acre or basal area is retained during harvest (see FEIS for description of each prescription type). Intermediate harvest prescriptions preserve old growth stand characteristics by retaining a minimum basal area of 80 square feet per acre of the largest and healthiest trees in the 'commercial thinning' units and 40 square feet per acre in the 'variable density thinning' units. 'Shelterwood' harvest may preserve old growth characteristics in some stands by retaining a minimum of 15 trees per acre of the largest and healthies trees. After treatment, treated old growth areas would continue to meet NIOG and FPOG definitions of old growth in some of the 'shelterwood' units and all of the intermediate harvest units (except within 'variable density thinning' gaps) by retaining a minimum of 15 trees per acre in the largest tree size class or a minimum basal area of 40 square feet per acre. Design Measures also emphasizes retention of snags greater than or equal to 15 inches diameter at breast height. Stands that are treated with 'clear cut with reserves' and 'seedtree' prescriptions and areas within 'variable density thinning' gaps would no longer meet NIOG and FPOG definitions.

Studies have found associations between high stand densities and lower tree vigor in old growth stands. By removing the smaller diameter, merchantable trees, reducing overall stand densities, and decreasing the overall canopy cover among the remaining trees, the risk of crown fires is reduced in MA20 and other areas with old growth characteristics through increased tree spacing and greater heat dispersion. An increase in tree vigor of the retained trees is expected as a result of reducing competition and providing more nutrient and moisture availability. Increased resource availability will have a beneficial effect on the old growth as increased vigor results in an increased ability to resist insect and disease attacks (Arno et al. 1995).

There would be both short and long-term effects to managing the allocated old growth patch. The existing canopy closure would be reduced as a result of treating the understory. Both timber harvest and prescribed burning would reduce tree densities, ladder fuels, and the competition for moisture and sunlight. This would create a wider tree spacing, allowing ponderosa pine to continue to dominate the landscape and lower the risk of stand-replacing catastrophic wildfires. Reducing the risks of losing the old growth patch and the ponderosa pine greatly outweighs the resulting reduction in canopy closure. If this allocated old growth patch is not treated with selectively thinning the understory of Douglas-fir and grand fir and prescribed fire, the area and the old growth ponderosa pine trees are at risk of being lost to stand replacing fires due to heavy fuel loads and ladder fuels due to past fire suppression activities and forest succession. Treating dense, overstocked stands would help retain and maintain habitats for many species that are dependent on these fire-climax ponderosa pine communities and old growth habitats. Effects to old growth dependent species are discussed in the wildlife section.

Prescribed fire would reduce the competing Douglas-fir and grand fir in the understory and favor ponderosa pine. Prescribed fire would help maintain the open canopied forests and habitats that once originated across the landscape prior to fire suppression activities. Natural fuel treatment would also reduce the risk of losing this area to stand replacing wildfires.

The use of prescribed fire in Alternatives 2 and 3 would reduce stocking levels, competition and fuels levels. Consumption of fuels will reduce wildfire potentials and nutrient availability will be increased. However, if prescribed burning is delayed or is ineffective to meet management objectives, the effects would be the same as the no action alternative.

Prescribed burning (Alternatives 2 and 3) for natural fuels in MA20 and other stands with old growth characteristics, as well as for slash disposal in stands with old growth characteristics that were treated,

would perpetuate an open overstory of large diameter trees. This would improve site conditions for the remaining trees and improve/maintain low elevation forage/browse habitat for big game species.

No prescribed burning activities would occur under Alternative 4. The effect of having no prescribed fire treatments in MA20 or other old growth stands would be the same as the no action alternative.

One of the most important aspects of using intermediate harvest treatments in the old growth ponderosa pine/Douglas-fir is the reduced risk of stand replacing wildfire associated with reduced tree densities and ladder fuels. By increasing tree spacing in the old growth and thinning out the smaller diameter, shade tolerant ingrowth, which can carry fire into the crowns of larger trees, the chance of losing these old growth areas to wildfire are reduced. Creating a more open crown for heat from natural or future prescribed ground fires to escape also reduces the chance of damage due to crown scorch. Findings by Arno et al. 1995 indicate, where fire suppression has had a substantial effect on ponderosa pine old growth forests in the form of ingrowth, and high ladder and ground fuels, that these forests cannot be restored to historic conditions without some type of mechanical reduction. Most restoration studies recommend using a combination of cutting and prescribed fire to accomplish ponderosa pine restoration work for these reasons (Arno et al. 1995; Habeck 1990).

Overall, old growth characteristics would remain or may even be improved after treatment activities are completed in MA20 stands treated with an intermediate harvest. Stands that may contain old growth characteristics would also retain or be improved through the proposed activities and following retention guidelines of live and dead trees based on North Idaho Old Growth Guidelines and Forest Plan old growth definitions.

As part of the Berg Salvage timber sale, Meadow Face, Clean Slate, and Middle Fork projects (USDA Forest Service 1996, 2003, 2004, 1997, respectively), Forest Plan designated old growth (MA20) was treated with a commercial thin and prescribed fire. The main objective of treating the old growth stands in these project areas was to reduce the stand densities (especially the understory); protect and enhance ponderosa pine old growth communities; and retain large diameter ponderosa pine and Douglas-fir trees.

As a result of the pre- and post-harvest monitoring of old growth in the Berg timber sale area, overall stand densities were reduced by 15 trees per acre. The goals of maintaining/retaining snags and the larger diameter ponderosa pine and Douglas-fir were met. However, the goal of reducing and/or eliminating the understory of shade-tolerant species was not met, especially in the smaller diameter grand fir and Douglas-fir MA20 patch.

The old growth treatments that are planned as part of the Hungry Ridge project are similar to the treatments that were designed for old growth stands in the Berg timber sale. However, it is expected that more of the smaller diameter trees would be reduced.

Table 3-18. Old Growth and MA20 remaining after Alternative 2 treatments

Old Growth Analysis Area (OGAA)	3050102	3050110	3050112	3050115	3050116	3050118
OGAA total size (NFS lands only)	6519	9981	13028	7282	10303	6779
OGAA forested acres	6008	9397	12535	6911	9661	6302
FPOG	126	68	252	274	120	12
NIOG	322	78	74	40	43	202
NIOG/FPOG[1]	53	411	0	208	0	0
MA20	5	905	1307	660	670	189
Acres of FPOG, NIOG, & FPOG/ NIOG that overlap with MA20	0	31	198	158	7	67

Existing OG[2]	506	1431	1435	1024	826	336
% existing OG per OGAA	8%	15%	11%	15%	9%	5%
Replacement OG [3,4]	744	222	352	419	909	778
Acres of replacement OG that overlap with MA20	5	1	21	236	50	72
% Replacement OG in OGAA	12%	2%	3%	3%	9%	11%
Total OG in OGAA[5]	1245	1652	1766	1207	1685	1042
Total % OG per OGAA	21%	18%	14%	17%	17%	17%

[1]Stands that meet both NIOG and FPOG definitions.
[2]Sum of MA20, Forest plan old growth, North Idaho old growth, and stands that meet both NIOG and FPOG definitions, minus overlap with MA20.
[3]Sum of stands between 110-149 years old.
[4]There are additional immature forest habitats that do not have stand exams that could qualify as replacement old growth.
[5] Calculation of old growth acres remaining after treatment is conservative. Calculation does not include acres of old growth that are proposed for shelterwood harvest, which can still meet old growth definitions.

Table 3-19. Old Growth and MA20 remaining after Alternative 3 treatments

Old Growth Analysis Area (OGAA)	3050102	3050110	3050112	3050115	3050116	3050118
OGAA total size (NFS lands only)	6519	9981	13028	7282	10303	6779
OGAA forested acres	6008	9397	12535	6911	9661	6302
FPOG	126	68	252	274	120	12
NIOG	322	78	74	40	43	243
NIOG/FPOG[1]	53	411	0	208	0	0
MA20	5	905	1310	671	670	259
Acres of FPOG, NIOG, & FPOG/ NIOG that overlap with MA20	0	31	180	158	7	107
Existing OG[2]	506	1431	1456	1035	826	407
% existing OG per OGAA	8%	15%	12%	15%	9%	6%
Replacement OG [3,4]	744	222	352	419	909	778
Acres of replacement OG that overlap with MA20	4	1	21	236	50	59
% Replacement OG in OGAA	12%	2%	3%	3%	9%	11%
Total OG in OGAA[5]	1246	1652	1787	1218	1685	1126
Total % OG per OGAA	21%	18%	14%	18%	17%	18%

[1]Stands that meet both NIOG and FPOG definitions.
[2]Sum of MA20, Forest plan old growth, North Idaho old growth, and stands that meet both NIOG and FPOG definitions, minus overlap with MA20.
[3]Sum of stands between 110-149 years old.

[4]There are additional immature forest habitats that do not have stand exams that could qualify as replacement old growth.
[5] Calculation of old growth acres remaining after treatment is conservative. Calculation does not include acres of old growth that are proposed for shelterwood harvest, which can still meet old growth definitions.

Table 3-20. Old Growth and MA20 remaining after Alternative 4 treatments

Old Growth Analysis Area (OGAA)	3050102	3050110	3050112	3050115	3050116	3050118
OGAA total size (NFS lands only)	6519	9981	13028	7282	10303	6779
OGAA forested acres	6008	9397	12535	6911	9661	6302
FPOG	126	94	252	190	120	12
NIOG	322	78	74	40	43	243
NIOG/FPOG[1]	53	411	0	175	0	0
MA20	5	905	1310	671	670	259
Acres of FPOG, NIOG, & FPOG/ NIOG that overlap with MA20	0	31	198	158	7	106
Existing OG[2]	506	1456	1438	918	826	408
% existing OG per OGAA	8%	15%	11%	13%	9%	6%
Replacement OG [3,4]	744	222	378	419	909	978
Acres of replacement OG that overlap with MA20	5	1	21	246	50	16
% Replacement OG in OGAA	12%	2%	3%	3%	9%	15%
Total OG in OGAA[5]	1245	1678	1795	1091	1685	1370
Total % OG per OGAA	21%	18%	14%	16%	17%	22%

[1]Stands that meet both NIOG and FPOG definitions.
[2]Sum of MA20, Forest plan old growth, North Idaho old growth, and stands that meet both NIOG and FPOG definitions, minus overlap with MA20.
[3]Sum of stands between 110-149 years old.
[4]There are additional immature forest habitats that do not have stand exams that could qualify as replacement old growth.
[5] Calculation of old growth acres remaining after treatment is conservative. Calculation does not include acres of old growth that are proposed for shelterwood harvest, which can still meet old growth definitions.

Wildlife security would be improved with additional road closures and decommission projects. Through road obliterations and additional road use restrictions, the incidence of human induced wildlife mortalities, disturbance, and displacement would be reduced.

A short segment of temporary road (0.1 miles) would impact the Black George MA20 patch. This road would be obliterated after harvest and planted. Other temporary roads would be built on the edges of stands that meet Forest Plan and North Idaho old growth definitions. Since the temporary roads are on the edge, the impacts would be minimal and the roads would be obliterated after use and planted.

Temporary road construction and harvest activities have the potential to disturb/displace wildlife species in the vicinity of the area due to the noise.

Approximately 1.3 miles of road would be constructed in stands that meet the definition of Forest Plan and North Idaho old growth (0.9 mile temporary and 0.4 mile new permanent road). The temporary roads would be obliterated and vegetated after use. New permanent roads proposed in Alternative 2 only, would not be decommissioned, but would be closed yearlong.

The addition of the permanent route in the north end of the project area (Rd 9408) is on a template that already exists on the landscape. The route runs along the edge of a patch of MA20. The impacts from this route would have minimal effects to wildlife species as these routes already occur on the landscape and future access is yearlong closure. There would be some noise and disturbance/displacement effects to wildlife with the construction of this road. The construction of a new permanent (closed year round) road off the end of road 9415 would run along the edge of a small portion of a stand meeting both NIOG and FPOG definitions and remove vegetation from a stand of FPOG for about 260 feet into the stand.

Road decommissioning would occur within or along the edges of a few stands of old growth and MA20 in Marble, Merton, and Trout Creeks. Decommissioning and revegetating the disturbed area would reduce the fragmentation caused by these roads.

Proposed road/trail improvement activities, watershed improvement activities, riparian plantings, meadow restoration, and hand thinning around private land would not have an appreciable effect on old growth habitats.

Cumulative Effects

Geographic Boundary

The cumulative effects area for old growth is the old growth analysis units associated with the Hungry Ridge project. This area was selected because effects would be diluted at a larger scale. The time frame for cumulative effects is 150 years which is the approximate amount of time required for stands to develop into a mature or older vegetative state and snags to develop into a condition that provides habitat for old growth and snag dependent species.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities listed in the EIS and have contributed to the amount, current distribution and condition of mature and old growth forest habitats. Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments. Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements.

Past timber harvest, fire, fire suppression, and recreational activities have altered habitat characteristics in the project area by reducing the amount and distribution of large and medium trees, snags, and down wood, and by creating numerous, small patches across the landscape. Some of the past regeneration harvest may have directly reduced the amount of old growth forest habitat, while other regeneration harvest in mature forest habitat would have reduced the availability of stands that could develop into old growth habitat in a relatively short period of time. Past actions frequently targeted medium and large trees and valuable ponderosa pine and western larch snags. Past harvest left few snags or legacy trees, and little down wood. These actions have left fewer appropriate stands, and trees within stands, that could be used by species that require mature or old growth forest conditions.

The fire regime within the analysis area has been altered due to fire suppression and forest succession. This has created stands that are dominated by shade-tolerant species like grand fir and Douglas-fir. Forest succession, fire suppression, and an increased risk of stand replacing wildfires pose the greatest threat to fire-climax ponderosa pine/Douglas-fir old growth forests and the wildlife species that depend on these types of habitats. Continued forest succession and fire suppression would continue to move this area outside the historical range of natural variability. A combination of understory thinning and

prescribed burning would help partially restore and maintain fire-climax ponderosa pine/Douglas-fir old growth habitats within the analysis area.

The large-scale wildfires in the late 1800s and early 1900s and subsequent fire suppression have contributed to the amount of over-mature/old growth habitats in the project area. Active fire suppression since the early 1900s has allowed succession to continue in those stands that have not been harvested. Relatively simple one- and two-story stands have transitioned to more complex multi-story stands with increased canopy closure, and individual trees have grown larger. Some of these stands may now qualify as suitable old growth stands. Increased fuel loads from fire suppression and the current insect and disease increases have increased the chance of stand-replacing fires, which could remove several acres of older forest habitats from the landscape.

Alternatives 2, 3 and 4 – Action Alternatives

Alternative 2 would harvest in ponderosa pine/Douglas-fir stands designated as MA20.

Alternatives 3 and 4 would not harvest in MA20.

All three action alternatives would harvest in stands that have large, old trees that meet forest plan and North Idaho old growth definitions. Through snag and green tree retention, structural diversity and large diameter trees would be left in those units that have old growth attributes. Proposed activities would also allow low elevation old growth communities to function as they once did under a natural fire regime and provide better quality habitat for wildlife species that depend on these old growth communities. Those areas both inside and adjacent to the Hungry Ridge project area that have not and will not be treated with either fire or timber harvest would have the same impacts as those described under Alternative 1.

In the long-term, action alternatives would lead to healthier stand conditions, increased tree growth, and reduced competition in treated stands by reducing the fuels in and adjacent to old growth blocks. It is the intent to reduce the potential for loss of old growth stands to large-scale wildfires. Action alternatives would also have slightly negative effects due to fragmentation and edge effects. Fewer snags and down logs would be lost to firewood cutters in the future because the extent of routes open to motorized use would be reduced.

The proposed Forest-wide DRAMVU Project would restrict cross country travel and designate routes for roads and trails. In general, DRAMVU would improve habitat conditions for old growth dependent species by restricting cross country access and reducing the loss of large snags because the extent of routes open to motorized use would be reduced. None of the alternatives in conjunction with past, present, and reasonably foreseeable actions would change the amount of MA20 and would not noticeably alter the amount of old growth within the old growth analysis unit.

Conclusion

Forest succession and fire suppression have created unnaturally dense conditions which changes the stand structure and species composition in the area. The heavy fuel loads and ladder fuels as a result of forest succession and fire suppression have increased the chance of losing the large ponderosa pine and western larch and the old growth components to catastrophic, stand replacing wildfires. The action alternatives are designed to reduce the chances of stand-replacing fires, yet retain habitat for wildlife species.

Activities associated with the Hungry Ridge project may impact some old growth habitat, but overall the intent is to protect and enhance those components that wildlife species depend upon and enhance the vegetative diversity and landscape patterns that are currently declining in quality or are lacking as a result of past human-induced activities and natural successional processes.

Although there may be some risks to old growth trees and snags within dry forest communities as part of the Hungry Ridge project, the long-term benefits of thinning and prescribed fire outweigh the risks of no action. Due to the poor health of some trees within the old growth stands, some mortality may occur regardless of the treatment. If fire or fuel treatments are not initiated, loss of ponderosa pine will occur due to successional replacement of other conifers accompanied with insect or disease epidemics and severe wildfires (Arno et al. 1995).

None of the alternatives would cause the irreversible or irretrievable commitments of resources relative to mature and old growth forest habitats.

Existing data show that OGAAs associated with the Hungry Ridge project meet the Forest Plan standard of five percent existing old growth and the remainder in replacement old growth. **Under all alternatives, that standard would continue to be met; old growth forest habitats would remain available to support the local and regional populations of old growth dependent species**.

4.6 Snag Habitat

Snags play an important role in creating biodiversity on the landscape. They provide holes that are homes for birds and small mammals, and decaying trees that are infested with insects provide food for woodpeckers, other birds, and some rodents.

Large-diameter snags of western larch, ponderosa pine, Douglas-fir, quaking aspen, and paper birch are favored tree species for nest sites for many wildlife species that utilize snags. Large-diameter snags provide nest habitat for the greatest variety of cavity nesters and stand longer than smaller snags. Although most cavity nesters select for the largest snags available in a geographic area, a few species like the black-backed, downy, and three-toed woodpeckers prefer smaller trees. Larger and taller snags have greater volume and are more likely to have the appropriate amount of decay than smaller ones at the preferred heights for nest excavation and foraging (Bull et al. 1997: 21-31).

Affected Environment

An analysis of snag densities for the Nez Perce National Forest has been conducted by Bush et al. (2010) using Forest Inventory and Analysis (FIA) data. The FIA survey is a general purpose, national inventory that is designed for strategic assessments (Czaplewski et al. 2003). FIA provides a representative sample of all forests, regardless of their classification. The estimated number of snags per acre on the Nez Perce National Forest by diameter at breast height (dbh) is displayed in Table 3-22. With the current mountain pine beetle epidemic in the Hungry Ridge Creek drainage, the number of smaller diameter snags is increasing.

Table 3-21. Forest-wide estimates of snags per acre for land managed by the Nez Perce National Forest, including 90 percent confidence intervals (Bush et al. 2010, table 4)

Snag criteria	Estimated Mean	90% confidence interval lower bound	90% confidence interval upper bound
Snags per acre >10” dbh	11.6 snags/ac	9.9 snags/ac	13.3 snags/ac
Snags per acre >15” dbh	4.2 snags/ac	3.4 snags/ac	5.1 snags/ac
Snags per acre >20” dbh	1.6 snags/ac	1.3 snags/ac	2.0 snags/ac

The estimated number of snags per acre for Hydrologic Unit Code (HUC) level 4 (17060305) encompassing the project area by diameter at breast height (dbh) is displayed in Table 3-23.

Table 3-22. Estimates of snags per acre for Hydrologic Unit Code (HUC) level 4 (17060305) encompassing the project, including 90 percent confidence intervals (Bush et al. 2010, table 5)

Snag criteria	Estimated **Mean**	90% confidence interval **lower bound**	90% confidence interval **upper bound**
Snags per acre >10” dbh	12.8 snags/ac	9.6 snags/ac	16.4 snags/ac
Snags per acre >15” dbh	4.0 snags/ac	2.6 snags/ac	5.6 snags/ac
Snags per acre >20” dbh	1.4 snags/ac	0.9 snags/ac	2.0 snags/ac

The primary threats to species using snag and downed wood habitats are the removal of live and dead trees for timber production or firewood. Along with fragmentation and habitat loss due to timber harvest

and stand-replacing wildfires after decades of fire suppression, intense, large-scale wildfires tend to consume already existing snags and down wood that are in the later stages of decay.

Environmental Consequences – Direct and Indirect Effects

Alternative 1 – No Action

No vegetative treatments would occur with this alternative and current vegetative processes would continue. The number of snags in the project area will increase with the no action alternative as large trees succumb to insects and diseases. Eventually, hard snags, like ponderosa pine and larch, will be replaced with softer, less persistent grand fir snags. It is possible, with continued fire suppression, that the early-seral tree species will be eliminated from certain areas entirely so that snag variety is limited. Wildlife species that prefer hard snag species may be affected by loss of habitat as a result. If wildfires occur, some existing snags will be lost and new snags will be created. This could increase or decrease in the amount of snags depending on the severity of the fires.

As forest succession and fire suppression occur in overstocked stands, trees become more susceptible to attack from insects and disease. This increases the amount of nesting and foraging resources available to snag-associated wildlife species. As the insect and disease outbreaks advance, standing and down dead material would increase, which in turn increases the risk of stand-replacing fires. If a fire event were to occur, wood-boring beetle populations would spike, possibly causing a coincident spike in some wildlife species. Without a fire event, the insect outbreak would eventually peak and subside. Grand fir and other more shade tolerant species that currently exist in the understory of stands with dead and dying trees would continue to grow, perhaps eventually causing the long-term loss of the early seral tree species (e.g., western larch and ponderosa pine). Under the no action alternative, the existing level of patchiness in the watershed would persist until a stand-replacing fire or other management action(s) take place.

Alternatives 2, 3, and 4 – Action Alternatives

The number of available snags is expected to decrease with all action alternatives because snag numbers will be reduced through elimination of hazard trees during logging operations across a large area. Some snags will be created from the burning of harvest slash and natural fuels treatments where fuels are concentrated. This would reduce the availability of both foraging and nesting sites for various wildlife species. The wildlife species that use the area may be displaced as a result of loss of nesting and foraging habitat, equipment noise, and human disturbance.

Treatments that include green and dead tree harvest to improve forest health and reduce the incidence of insects and disease would reduce habitat for many snag dependent species. Not only would the habitat they are using be modified, but the patchiness of the remaining habitat would increase.

Alternative 4 would modify the fewest acres of snag habitat and Alternative 2 would modify the greatest acreage.

Snags may be left standing in treatment areas to the extent they do not jeopardize worker or public safety. However, safety is paramount and several snags in harvest units are likely to be removed. In intermediate harvest units, sufficient live trees would be left to ensure future snag recruitment. In regeneration units, some live trees would be retained, in part to provide for future snag recruitment. Snags would not be removed from riparian habitat area buffers (see aquatic resources design measures) and other areas within the project area not included in treatment units.

Prescribed burning activities are expected to additionally reduce the number of snags retained in harvested areas and are expected to kill some green that would serve as replacement snag trees, as well in prescribe burn units not associated with harvest units.

Regeneration harvest would substantially reduce the availability of nesting and foraging habitats within the treatment units, in both the short-term and long-term. In clearcut with reserves units, there would be approximately 6-10 trees per acres >12 inches dbh remaining after harvest. In seed tree units, approximately 8-15 trees per acres >12” dbh would remain. In shelterwood units, approximately 15-40 trees per acre >12 inches dbh would remain (see EIS for a detailed description of alternatives). The few remaining trees and snags in each regeneration treatment unit would not provide suitable nesting,

denning, and/or foraging sites or the structural diversity that is required by snag-dependent wildlife species within those units.

In intermediate harvest units, the silvicultural prescription calls for 80-140 trees per acre >12 inches dbh trees remaining after harvest in commercial thinning and variable density thinning (VDT) units, except for VDT gaps. The potential to retain large-diameter snags (>15" dbh) in intermediate harvest units is higher than in regeneration units. Retention of standing live and dead trees throughout harvest units (see Wildlife Design Criteria) would provide structural habitat features in treated areas, especially in human-induced openings.

There could be a loss of snags and future snags during the construction of temporary and permanent roads. The construction of roads for harvest would eliminate available snag habitat. While temporary roads would be decommission and revegetated following harvest activities, it would take many decades to grow large diameter trees to provide the structural components associated with snag habitat.

Implementing watershed and soil improvement projects (road/trail reconstruction/maintenance, culverts, road decommissioning, and soil restoration), pre-commercial thinning, hand-thinning, and meadow restoration treatments associated with the action alternatives would not have an appreciable effect on snag habitats.

Cumulative Effects

Geographic Boundary

The cumulative effects area for the snag analysis is the Hungry Ridge project area. The time frame for cumulative effects is 100 years because it takes this long to develop mature habitat with an adequate dead wood component.

Past, Present, and Foreseeable Future Actions

The past and ongoing activities are described in detail in the EIS and have contributed to current habitat conditions. Ongoing actions within the proposed activity areas consist of recreation, road/trail maintenance, fire suppression, activities from Adams and Doc Denny projects (timber harvest, road/trail improvements, and watershed improvements), watershed restoration, livestock grazing, outfitters and guides, and weed treatments. Foreseeable activities that might have the potential to affect habitat conditions within the analysis area are the DRAMVU, Eastside Allotment, and watershed improvement/restoration projects (culvert upgrades, beaver analogs), and road improvements.

Many of the past harvest projects may have directly reduced the amount of snag habitat. Snags are continually being lost during harvest activities for safety reasons, as well as firewood cutting. Snags are also constantly being lost and created by natural wildland fires and insect and disease activity. Some of these snags fall to provide nutrient cycling and ground structure for habitat. With fire suppression, the density of snags may have increased, but the size of the snags may have decreased, which is not be beneficial to wildlife species that depend on large-diameter snags and logs. Access restrictions associated with the DRAMVU project may reduce the number of snags taken by firewood gatherers along currently open motorized roads.

Increased fuel loads from fire suppression increase the chance of large-scale wildfires, which could remove acres of already existing snags across the landscape. Fires would also create additional snags, in addition to the current insect and disease situation.

No Action - Alternative 1

The No Action alternative would produce no additional effects to snag dependent wildlife species or their habitat, as compared to past activity levels. Alternative 1 would have no direct or indirect effects and therefore no cumulative effects on snag habitat. Existing vegetation would not be altered.

Alternatives 2, 3, and 4 – Action Alternatives

Snags will continually be lost during harvest activities for safety reasons, as well as firewood cutting. Regeneration harvest creates areas practically devoid of snags or down wood within a given area, especially when the new units are adjacent to old units. Intermediate harvest has more of a potential to

retain existing snags as the treatment is lighter than regeneration harvest practices. Snags will also be created through damage to residual trees and burning operations.

For the Action Alternatives, cumulatively, there would be a long-term change in the amount of dead and dying trees that provide nesting and foraging substrate within harvest units across a large area. There would be displacement/disturbance of snag associated wildlife species with the implementation of activities.

Conclusion

Nez Perce Forest Plan goals, objectives, and standards for old growth, snags and riparian habitats help conserve habitats for species using dead wood. Based on the information presented, there appears to be little risk of loss of population viability of snag associated species on the Nez Perce National Forest. The actions taken on the Nez Perce National Forest are consistent with maintaining snag habitat for viable populations of these species at all scales.

The Hungry Ridge project would comply with Forest Plan direction related to snag retention. Design features ensure snags greater than 15 inches dbh and other non-merchantable snags would be retained if they do not pose a safety hazard. Draws and riparian areas would not be harvested thus snag densities would be in excess of the Forest Plan standards and habitat for snag associated species would be maintained in the project area and surrounding landscape.

4.7 Determination of Effects

Determination of effects to threatened, proposed, and sensitive wildlife species as a result of proposed alternatives are summarized in the table below. This table includes all wildlife species on the Nez Perce National Forest sensitive species list. There is potential for impacts to wildlife species from the Hungry Ridge project, such as reducing habitat for some species, improving habitat for others, and potentially disturbing and displacing wildlife during implementation of proposed activities. There would be no concerns for the overall viability of sensitive wildlife species' populations with the Hungry Ridge project.

Table 3-23. Determination of effects for threatened, proposed, and sensitive wildlife species

Common Name	Latin Name	Status[1]	Alt 1	Alt 2	Alt 3	Alt4
Canada lynx	*Lynx canadensis*	T	NE	NLAA	NLAA	NLAA
Wolverine	*Gulo gulo*	S	NI	NI	NI	NI
Western toad	Anaxyrus *boreas*	S	NI	MI	MI	MI
Gray wolf	*Canis lupus*	S	NI	MI	MI	MI
Townsend's big-eared bat	*Corynorhinus townsendii*	S	NI	MI	MI	MI
Black swift	*Cypseloides niger*	S	NI	NI	NI	NI
Ring-necked snake	*Diadophis punctatus*	S	NI	MI	MI	MI
Peregrine falcon	*Falco peregrinus anatum*	S	NI	NI	NI	NI
Common loon	*Gavia immer*	S	NI	NI	NI	NI
Bald eagle	*Haliaeetus leucocephalus*	S	NI	MI	MI	MI
Harlequin duck	*Histrionicus histrionicus*	S	NI	NI	NI	NI
Fisher	*Pekania pennanti*	S	NI	MI	MI	MI
Long-eared myotis	*Myotis evotis*	S	NI	MI	MI	MI
Long-logged myotis	*Myotis volans*	S	NI	MI	MI	MI
Fringed myotis	*Myotis thysanodes*	S	NI	MI	MI	MI
Long-billed curlew	*Numenius americanus*	S	NI	NI	NI	NI
Mountain quail	*Oreortyx pictus*	S	NI	MI/BI	MI/BI	MI/BI
Flammulated owl	*Psiloscops flammeolus*	S	NI	MI/BI	MI/BI	MI/BI

Common Name	Latin Name	Status[1]	Alt 1	Alt 2	Alt 3	Alt4
Bighorn sheep	*Ovis canadensis*	S	NI	NI	NI	NI
White-headed woodpecker	*Picoides albolarvatus*	S	NI	MI/BI	MI/BI	MI/BI
Black-backed woodpecker	*Picoides arcticus*	S	NI	MI	MI	MI
Coeur d' Alene salamander	*Plethodon vandykei idahoensis*	S	NI	NI	NI	NI
Pygmy nuthatch	*Sitta pygmaea*	S	NI	MI/BI	MI/BI	MI/BI

[1]**Status =** T = Threatened, P = Proposed, S = Sensitive
NE = No Effect;
NLAA = Not Likely to Adversely Affect;
NLJ = Not likely to jeopardize the continued existance or adversely modify proposed critical habitat;
NI = No Impact;
BI = Beneficial Impact;
MI = May impact individuals or habitat but not likely to cause trend toward federal listing or reduce viability for the population or species

5. Effectiveness of Mitigation

By applying design and mitigation measures, the effects to many wildlife species and their habitat will be reduced, particularly northern goshawks, moose, snag associated species, late-seral dry forest communities, species preferring security, and young of the year.

Snags

Snag and green tree retention mitigations are designed to retain, at least partially, habitat structural component for wildlife species.

- Retain trees (green or snags) with obvious cavities or large stick nests.
- Retain all snags greater than or equal to 15 inches diameter at breast height to the maximum extent possible.

Goshawk

Appropriate protection measures would be implemented where deemed necessary to protect northern goshawk nest sites, brood rearing areas, their young, and reduce disturbance (Brewer et al. 2009).

- Maintain a minimum 40 acre yearlong no-treatment buffer (no ground disturbing activities) around recently occupied nest trees.
- No ground disturbing activities shall be allowed inside known occupied post-fledgling areas (420 acres around nests) from April 15 to August 15, unless site-specific monitoring supports earlier or later entry.

Security/Road Closures

The integrity of existing access management restrictions would be maintained within the planning area for wildlife security purposes by:

- Close existing gates (consistent with current motor vehicle restrictions) daily during non-operating hours. Even though roads may be open for administrative purposes they are still closed to the public and therefore, the integrity of the roads closures would be maintained.

Moose

Mitigations are in place to retain pockets of grand fir and Pacific yew, thus retaining small pockets of winter habitat within treatment units for moose:

- Retain forested areas greater than 1/2 acre containing Pacific yew, where they meet the criteria of moose winter habitat (i.e., at least 50% understory canopy cover of yew and overstory canopy

cover of at least 30%). No broadcast burning within retained yew areas. If pile burning, pile no closer than 30 feet from retained patches.

Burning

Mitigations are in place to reduce the effects of spring burning to wildlife species, especially young of the year.

- Limit spring broadcast burning to those units that cannot be burned in summer/fall due to safety and risk concerns and still meet management objectives; to minimize impacts on wildlife, especially during breeding, nesting, calving/fawning, and denning periods; to improve forage response.

6. Regulatory Framework

The principal policy document relevant to wildlife management on the Nez Perce National Forest is the 1987 Nez Perce National Forest Plan (Forest Plan), which contains goals, objectives, standards, and guidelines for management of wildlife species and habitats on the Forest. Forest Plan goals (pp. II-1 and -2) addressing wildlife and wildlife habitats are summarized below:

- Provide and maintain a diversity and quality of habitat to support viable populations of native and desirable non-native wildlife species.
- Provide habitat to contribute to the recovery of Threatened and Endangered plant and animal species in accordance with approved recovery plans. Provide habitat to ensure the viability of those species identified as sensitive.
- Recognize and promote the intrinsic ecological and economic value of wildlife and wildlife habitats. Provide high-quality and quantity of wildlife habitat to ensure diversified recreational use and public satisfaction.
- Protect or enhance riparian-dependent resources.

FSM 2670 directs that all federal departments and agencies shall seek to conserve endangered and threatened species and shall utilize their authorities in furtherance of the Endangered Species Act and to avoid actions that may cause a species to become threatened or endangered. FSM 2670 also calls for the Forest Service to maintain viable populations of all native and desirable non-native wildlife, fish, and plant species in habitats distributed throughout their geographic range on system lands.

The three principal laws relevant to wildlife management on lands managed by the Forest Service are the Endangered Species Act of 1973, the National Forest Management Act of 1976 and its implementing regulations at 36 CFR 219, and the National Environmental Policy Act (NEPA). Regulations promulgated subsequent to passage of these laws require the Forest Service to maintain viable populations of all native and desirable non-native wildlife species with emphasis on assuring that federally listed (threatened and endangered) species populations are allowed to recover (36 CFR 219.9). Regional Foresters provide a list of sensitive species for each Forest. Forests are required to assure that sensitive species populations do not decline or trend towards listing under the Endangered Species Act (FSM 2670.22).

This analysis incorporates the effects on terrestrial sensitive species (i.e., Biological Evaluation), per direction pertaining to streamlining (USDA Forest Service 1995a). The streamlined process for doing biological evaluations for sensitive species focuses on two areas:

- Incorporating the Effects on Sensitive Species into the NEPA Document
- Summarizing the Conclusions of Effects of the Biological Evaluations for Sensitive Species (Table 3-24).

Executive Order (E.O.) 13186, “Responsibilities of Federal Agencies to Protect Migratory Birds” (January 10, 2001) pertains to conservation of migratory birds. A Memorandum of Understanding to carry out the mandate of the E.O. was signed by the U.S. Forest Service and the U.S. Fish and Wildlife Service on

January 7, 2001. In 1988, an amendment to the “Fish and Wildlife Conservation Act” required the U.S. Fish and Wildlife Service to “identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973.” To carry out this mandate, the U.S. Fish and Wildlife Service published “Birds of Conservation Concern 2002,” which recommends that its lists be consulted in accordance with E.O. 13186. In addition, numerous birds are protected by Idaho Department of Fish and Game nongame status and the Migratory Bird Treaty Act. Currently, there are no Nez Perce Forest Plan standards specific to migratory birds.

7. Consistency with Forest Plan and Environmental Laws

Threatened and Endangered Species – Federal agencies are required to address effects to threatened, endangered, and proposed species during project planning (Endangered Species Act of 1973 as amended, P.L. 96-1591531 (c)). This document incorporates the effects on terrestrial threatened and endangered species (i.e., Biological Evaluation), per direction pertaining to streamlining (USDA Forest Service 1995a). This project is in compliance with the Endangered Species Act.

Sensitive Species – Sensitive wildlife species are those that show evidence of a current or predicted downward trend in population numbers or habitat suitability that would substantially reduce species distribution. Federal laws and direction applicable to sensitive species include the National Forest Management Act (NFMA 1976) and Forest Service Manual 2670.22. The Nez Perce Forest has standards to conduct analyses to review programs and activities to determine their potential effect on sensitive species and to prepare biological evaluations. The Forest Service is bound by federal statutes (Endangered Species Act, National Forest Management Act), regulation (USDA 9500-4), and agency policy (FSM 2670) to conserve biological diversity on National Forest System lands and assure that sensitive species populations do not decline or trend toward listing under the Endangered Species Act. A biological evaluation for sensitive species has been prepared. The action alternative would not affect sensitive species viability on Nez Perce National Forest lands, nor would they cause sensitive species to become federally listed as threatened or endangered. This project is in compliance with sensitive species direction. This analysis incorporates the effects on terrestrial threatened and endangered species (i.e., Biological Evaluation), per direction pertaining to streamlining (USDA Forest Service 1995a). This project is in compliance with the Endangered Species Act.

Species Viability – The action alternatives—in combination with, and within the context of past, present, and reasonably foreseeable future management actions in the analysis area—would not affect population viability or distribution of native and desired nonnative vertebrate species on the Forest. This project is in compliance.

National Forest Management Act – The National Forest Management Act requires (among other things) the Forest Service to “preserve and enhance the diversity of plant and animal communities.”

The Endangered Species Act of 1973, National Forest Management Act of 1976, and Forest Service regulations require federal land managers to maintain viable populations of all native and desirable non-native wildlife species with special care taken to assure that federally listed (threatened and endangered) species populations are allowed to recover. There are no federally listed threatened or endangered species using the project area. The action alternative are in compliance with the National Forest Management Act (also see Sensitive Species and Species Viability in this section).

Neotropical Migratory Bird Laws – The Migratory Bird Treaty Act (MBTA) prohibits taking of migratory birds, their parts, nests, eggs, and nestlings. EO 13186, signed January 10, 2001, directs federal agencies to protect migratory birds by integrating bird conservation principals, measures, and practices into agency activities and to avoid or minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions. Additional direction comes from the MOU between the Forest Service and USFWS, signed December 2008. The purpose of this MOU is to strengthen migratory

bird conservation through enhanced collaboration between the Forest Service and USFWS, in coordination with State, tribal, and local governments.

The action alternatives are in compliance with the MBTA and Executive Order 13186, which authorizes activities including habitat protection, restoration, enhancement, necessary modification, and implementation of actions that benefit priority migratory bird species (Memorandum of Understanding Between USDA Forest Service and USDI Fish & Wildlife Service – 01-MU-11130117-028).

Nez Perce Forest Plan – As stated under Regulatory Framework, the objective for managing sensitive species is to ensure population viability throughout their range on National Forest lands and to ensure that they do not become federally listed as threatened or endangered. The Forest Plan supports this direction but does not set specific standards and guides for sensitive species. Proposed activities are consistent with this direction to the extent that proposed management actions do not adversely affect viability of existing sensitive wildlife populations.

Applicable standards of the Nez Perce Forest Plan associated with the management of wildlife and key habitats of threatened, endangered, sensitive, and management indicator species have been reviewed and are being met, and in some instances, exceeded.

The Hungry Ridge project is consistent with Forest Plan wildlife standards and wildlife-specific management area direction as shown in the tables below (USDA Forest Service 1987a).

Table 3-1. Consistency of project with Forest Plan wildlife standards

STANDARD NUMBER	SUBJECT SUMMARY	COMPLIANCE ACHIEVED BY
Forest Plan Standards		
1	Maintain viable populations of existing native and desirable non-native vertebrate wildlife species	Viable populations continue to be maintained on the Forest. For species addressed in this analysis, viability is not a concern.
2	Cooperate with future recovery efforts for peregrine falcon, bald eagle, gray wolf and grizzly bear.	Continued involvement in inventories and annual meetings between agencies. Recovery efforts have been met for most of these species.
3	Monitor population levels of all MIS on the Forest.	Management indicator species continue to be monitored. Cooperative efforts between the Forest, BLM, and IDFG to monitor MIS on the Forest are occurring.
4	Recognize fishing and hunting rights guaranteed the Nez Perce Tribe	Government to Government consultation has occurred for this project. The Forest continues to recognize the fishing and hunting rights guaranteed the Nez Perce Tribe.
5	Coordinate with the Idaho Department of Fish and Game to achieve mutual goals for fish and wildlife.	The Forest continues to work with the IDFG in managing wildlife species and their habitat. Continued involvement and annual meetings between agencies.
6	Use “Guidelines for Evaluating and Managing Summer Elk Habitat in Northern Idaho” to manage for and to assess the attainment of summer elk habitat objectives in project evaluations (Appendix B).	The Forest uses these guidelines to assess existing condition and effects of this project. All elk analysis units would improve. One unit would remain below.
7	Provide management for minimum viable populations of old-growth and snag dependent species by adhering to the standards stated in Appendix N.	Old growth standards would be met or exceeded with this project. It is assumed snag and green tree recruitment amounts will be met per FP standards. Snag retention guidelines would comply with the Forest Plan, except in units that the average dbh is less than 15 inches and in pure lodgepole pine stands as trees rarely grow to be 15” dbh.
8	Educate Forest Service employees about wolves including habitat and prey needs, and wolf characteristics.	Information related to wolves is disseminated to employees.

STANDARD NUMBER	SUBJECT SUMMARY	COMPLIANCE ACHIEVED BY
9	Coordinate the scheduling of land-disturbing activities with adjacent Districts to address cumulative effects over large areas in key wolf habitats.	Federal Register Nov. 22 1994, notice states that no land-use restrictions may be employed when six or more breeding pairs are established.
10	Maintain or improve elk habitat at, or near, optimum levels by applying elk guidelines in key wolf areas outside wilderness.	Elk forage habitat would be improved as this project is implemented. The North Idaho Guidelines for Evaluating and Managing Summer Elk Habitat was used to evaluate the effects of this project in elk analysis units, not just in key wolf areas. All elk analysis units would improve. One unit would remain below.
11	Design timber harvest activities in moderate and high elk objective areas, when compatible with established fish/water quality objectives and economics, so that units at the far end of the road will be cut first.	The intent is to work on units at the end of the road first, but this depends on the logging systems and seasonal accessibility on any given road.
12	Avoid logging activity on traditional big game calving/fawning or nursery areas from May 15-June15.	No key traditional calving areas occur in the project area. When wetland/riparian areas are found within harvest units, appropriate Amendment 20 buffers will be applied.
13	Consult with IDFG & USFWS to determine management of known or suspected initial wolf home sites	Government-to-Government consultation continues to occur.
14	The use of non-protected KV funds to protect or enhance habitats for threatened and endangered species.	The protection or enhancement of wildlife habitats for T&E species can be accomplished other then KV funds. Habitat enhancement projects are a part the Forest's wildlife program.
15	Consult with USFWS on allotment or livestock class changes or grazing period extensions in areas where allotment boundaries overlap or are near key wolf areas.	Government-to-Government consultation continues to occur. Federal Register Nov. 22 1994, notice states that no land-use restrictions may be employed when six or more breeding pairs are established.
16	Consult with the IDFG & USFWS whenever conflicts between wolves and livestock arise.	Government-to-Government consultation occurs when conflicts arise.
17	Develop a site-specific nest management plan for active bald eagles nests within 2 years after discovery.	Nesting bald eagles have not been documented on the Nez Perce National Forests.
18	Continue the Raptor-Lookout Program that was initiated to utilize lookout towers as observation posts.	District/Forest personnel continue to report wildlife observations.

Table 3-2. Consistency of project with Forest Plan management area direction

Management Area	Resource Element	Standards	Project Compliance Achieved by
MA 1 Minimum Management	No applicable wildlife standards.		

Management Area	Resource Element	Standards	Project Compliance Achieved by
MA 10 Riparian	Wildlife and Fish Habitat Management	Maintain sufficient streamside vegetative canopy to ensure acceptable water temperatures for fish and to provide cover. Management activities shall not be permitted to adversely change the composition and productivity of key riparian vegetation. Riparian areas now degraded by management should be rehabilitated before any further nondependent resource use of the immediate area is permitted. Schedule habitat improvements in all drainages presently below stated objectives. Improvements will include in-stream structures, channel changes, and riparian revegetation. Use in-stream improvements and barrier removal to enhance those drainages where habitat capacity is undisturbed. Maintain sufficient streamside vegetative structure, composition, and diversity for travel corridors between old-growth stands.	Streamside vegetation canopy, structure, composition and diversity will not be compromised as part of this project. Action alternatives would implement habitat improvements to move the area toward stated objectives.
MA 12 Timber	No applicable wildlife standards.		
MA 16 Big Game Winter Range	Wildlife – Access Management	Restrict all roads except specifically-identified arterials and collectors during winter to reduce disturbance, harassment, and poaching of animals. Roads to be closed shall be identified in the Forest Travel Plan.	Highway 14 and Road 309 are open collector roads in elk winter range. These roads are main routes through the forest; therefore, this standard does not apply to these roads and access changes on these roads are not part of the project. Other roads in the project area in winter range are closed yearlong.
MA 17 Visuals	No applicable wildlife standards.		
MA 20 Old Growth	No applicable wildlife standards.		
MA 21 Moose Winter Range	Wildlife Management Non-structural Improvements	Close all but specifically-identified roads during the fall and winter. Restrict range improvements to areas where conifer and Pacific yew regeneration has been established.	This standard is not applicable to this project.

PACFISH (USDA Forest Service 1995b) also provides project and site-specific standards and guidelines related to a number of activities. Table 24 shows PACFISH standards and guidelines related to wildlife and project compliance with them. The project complies with the standards and guidelines.

Table 3-3. Project compliance with PACFISH standards and guidelines

STANDARD NUMBER	SUBJECT SUMMARY	COMPLIANCE ACHIEVED BY
Forest Plan Amendment 20 (PACFISH)		
FW 1	Design and implement fish and wildlife habitat restoration and enhancement actions in a manner that contributes to attainment of the Riparian Management Objectives.	92 acres of meadow restoration would occur with this project, thus improving meadow habitat conditions.
FW 2	Design, construct, and operate fish and wildlife interpretive and other user-enhancement facilities in a manner that does not retard or prevent attaining the RMOs or adversely affect anadromous fish.	This standard is not applicable to this project since interpretive and user-enhancement facilities are not part of the proposed actions.
FW-3	Cooperate with Federal, Tribal, and State wildlife management agencies and eliminate wild ungulate impacts that prevent attainment of RMOs or adversely affect listed anadromous fish.	Wild ungulate-related impacts that could prevent the attainment of RMOs in the analysis area have not been documented.

8. Short-Term Uses and Long-Term Productivity

Proposed project activities would modify wildlife species habitat and would result in short-term changes in habitat conditions and distributions of threatened, sensitive, and management indicator wildlife species. There would also be short-term adverse effects due to direct mortality or displacement of individuals and/or loss of habitat. There would be long-term benefits with creation of early seral habitat for big game species and improvement to low elevation ponderosa pine habitats. There would be a long-term loss in the amount of snags in the project area.

9. Unavoidable Adverse Effects

Under Alternatives 2, 3, and 4, there could be direct mortality to amphibians and young-of-the-year of several wildlife species during implementation of this project. The alternatives are consistent with Forest Plan direction related to management actions not adversely affecting viability of existing sensitive wildlife populations.

10. Irreversible and Irretrievable Commitment of Resources

Proposed project activities would modify wildlife species habitat and would result in short-term changes in habitat conditions and distributions of sensitive and management indicator wildlife species. The project would result in some loss of wildlife habitat and displacement of wildlife species during implementation of project activities. There would be a long-term loss in wildlife habitats and impacts to old growth habitat, including MA20, with the construction of new permanent roads. There would be a short-term loss in habitat with the construction of temporary roads.

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